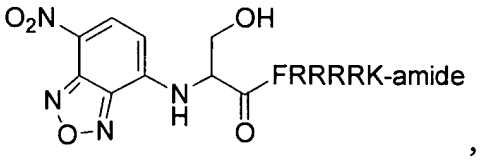
Amendments to the Claims:

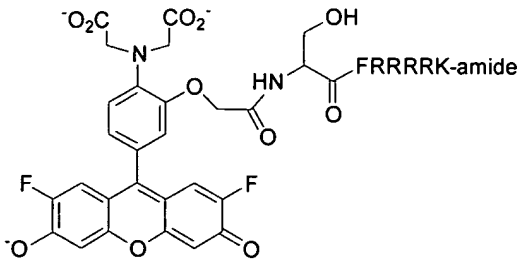
Please cancel Claims 103-121 and 144-145 without prejudice or disclaimer, and amend Claims 49, 56, 60-61, 88, 129 and 133 as set forth below.

1-48. (Canceled)

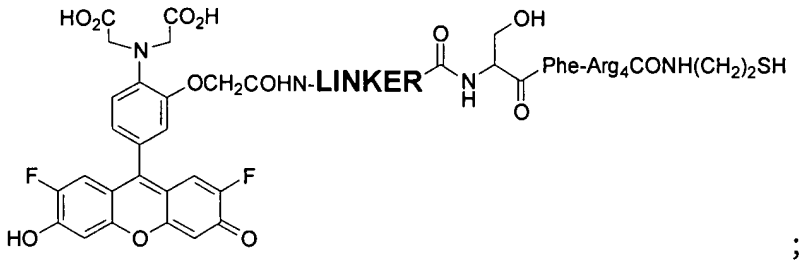
49. (Currently amended) A substrate for a protein kinase, ~~wherein the substrate comprises a peptide and at least one fluorophore, wherein a fluorophore is attached to a serine, a threonine, or a tyrosine on at least one terminal end of the peptide, wherein phosphorylation by the protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% change in fluorescence intensity, and~~ wherein the substrate is selected from the group consisting of:



,

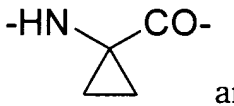


, and

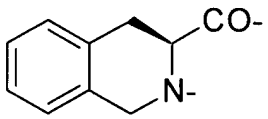


;

wherein F is phenylalanine, K is lysine, and R is arginine; and wherein the LINKER is selected from the group consisting of N-methyl glycine, L-proline, D-proline,



and



.

50-55. (Canceled)

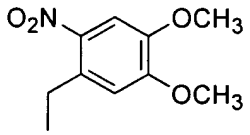
56. (Currently amended) A substrate for a protein kinase, wherein the substrate comprises:

a peptide substrate for the protein kinase, wherein the peptide comprises ~~comprising~~ a serine, a threonine, or a tyrosine on a terminal end of the peptide;

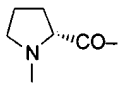
at least one fluorophore, wherein a fluorophore is attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide; and

a photolabile side chain attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide, wherein the photolabile side chain blocks transfer of a phosphoryl group from adenosine triphosphate to a hydroxyl moiety of the serine, the threonine, or the tyrosine so that the substrate cannot be phosphorylated by a protein kinase until the photolabile side chain is removed from the substrate; and

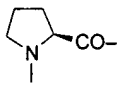
wherein the ~~the~~ photolabile side chain comprises the structure



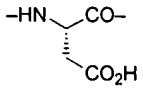
or a fluorophore is attached to the peptide by a linker selected from the group consisting of



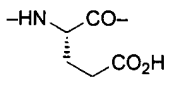
a



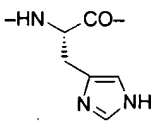
b



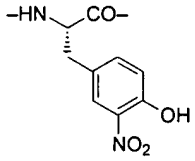
c



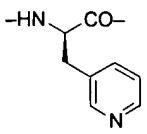
d



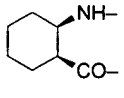
e



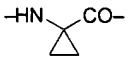
f



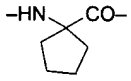
g



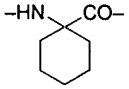
h



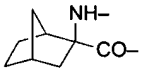
i



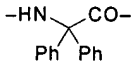
j



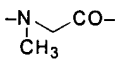
k



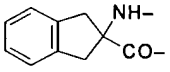
l



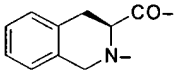
m



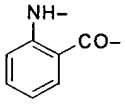
n



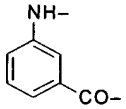
o



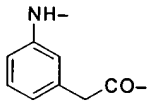
p



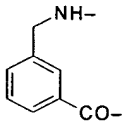
q



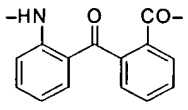
r



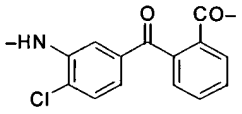
s



t



u



v

no linker

w

; and

wherein

(i) the substrate is specific for a protein kinase subtype,

(ii) the fluorophore is attached to the C-terminal end of the peptide,

(iii) a fluorophore is attached to each terminal end of the peptide,

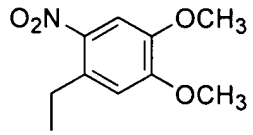
(iv) a first fluorophore is attached to a terminal end of the peptide and a second fluorophore, with photophysical properties distinct from the first fluorophore, is attached to any nonterminal site on the peptide,

(v) the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative,

(vi) the fluorophore is attached to the peptide by a linker selected from the group consisting of a carboxamide linker, an aminobenzoic acid linker, a sulfonamide linker, a urea linker, a thiourea linker, an ester linker, a thioester linker, an alkylamine linker, an arylamine linker, an ether linker, and a thioether linker, and/or

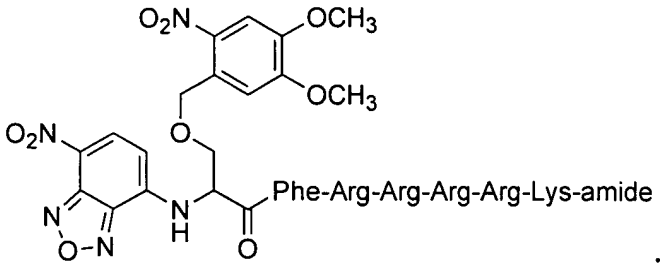
(vii) the substrate further comprises a carbohydrate, a lipid or a nucleic acid.

57. (Original) The substrate of claim 56, wherein the photolabile side chain comprises the structure



58. (Original) The substrate of claim 56, wherein the substrate comprises a serine with a photolabile side chain that blocks phosphoryl transfer.

59. (Original) The substrate of claim 58, wherein the substrate has the structure



60. (Original) The substrate of claim 56, wherein after removal of the photolabile side chain, phosphorylation by a protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% change in fluorescence intensity.

61. (Currently amended) The substrate of claim 56, wherein after removal of the photolabile side chain, phosphorylation by a protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% increase in fluorescence intensity. ~~The substrate of claim 60, wherein the change in fluorescence intensity when the substrate is phosphorylated by the protein kinase is an increase in fluorescence intensity.~~

62. (Currently amended) The substrate of claim 56, wherein after removal of the photolabile side chain, phosphorylation by a protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% decrease in fluorescence intensity. ~~The substrate of claim 60, wherein the change in fluorescence intensity when the substrate is phosphorylated by the protein kinase is a decrease in fluorescence intensity.~~

63. (Previously presented) The substrate of claim 60, wherein phosphorylation of

the substrate by the protein kinase produces at least a 70% change in fluorescence intensity.

64. (Original) The substrate of claim 63, wherein phosphorylation of the substrate by the protein kinase produces at least a 100% change in fluorescence intensity.

65. (Original) The substrate of claim 64, wherein phosphorylation of the substrate by the protein kinase produces at least a 150% change in fluorescence intensity.

66. (Original) The substrate of claim 65, wherein phosphorylation of the substrate by the protein kinase produces at least a 250% change in fluorescence intensity.

67. (Previously presented) The substrate of claim 56, wherein the substrate is specific for a protein kinase subtype.

68. (Original) The substrate of claim 67, wherein the substrate is specific for protein kinase C.

69. (Original) The substrate of claim 68, wherein the substrate is specific for isoforms α, β, and γ of protein kinase C.

70. (Withdrawn) The substrate of claim 67, wherein the substrate is specific for protein kinase A, protein kinase B, protein kinase D, protein kinase G, Ca^{+}/calmodulin-dependent protein kinase, mitogen-activated protein kinase, protein kinase mos, protein kinase raf, protein tyrosine kinase, tyrosine kinase abl, tyrosine kinase src, tyrosine kinase yes, tyrosine kinase fps, tyrosine kinase met, cyclin-dependent protein kinase, or cdc2

kinase.

71. (Previously presented) The substrate of claim 56, wherein the substrate further comprises a carbohydrate, a lipid or a nucleic acid.

72. (Canceled)

73. (Previously presented) The substrate of claim 56, wherein the fluorophore is attached to the C-terminal end of the peptide.

74. (Previously presented) The substrate of claim 56, wherein the fluorophore is attached to the N-terminal end of the peptide.

75. (Previously presented) The substrate of claim 56, wherein a fluorophore is attached to each terminal end of the peptide.

76. (Original) The substrate of claim 75, wherein fluorophores with distinct photophysical properties are attached to different terminal ends of the peptide.

77. (Previously presented) The substrate of claim 56, wherein a first fluorophore is attached to a terminal end of the peptide and a second fluorophore, with photophysical properties distinct from the first fluorophore, is attached to any nonterminal site on the peptide.

78. (Previously presented) The substrate of claim 56, wherein the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative.

79. (Withdrawn) The substrate of claim 56, wherein the fluorophore is a fluorescein derivative.

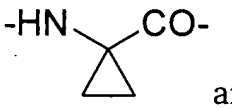
80. (Withdrawn) The substrate of claim 56, wherein the fluorophore is selected from the group consisting of a dansyl derivative, an acridine derivative, an Alexa Fluor derivative, a BODIPY derivative, an Oregon Green derivative, a Rhodamine Green derivative, a Rhodamine Red-X derivative, a Texas Red derivative, a Cascade Blue derivative, a Cascade Yellow derivative, a Marina Blue derivative, a Pacific Blue derivative, an AMCA-X derivative, and a coumarin derivative.

81. (Canceled)

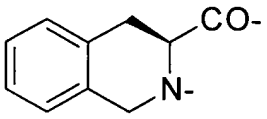
82. (Withdrawn) The substrate of claim 56, wherein the fluorophore is attached to the peptide by a metal chelating linker.

83. (Previously presented) The substrate of claim 56, wherein the fluorophore is attached to the peptide by a linker selected from the group consisting of a carboxamide linker, an aminobenzoic acid linker, a sulfonamide linker, a urea linker, a thiourea linker, an ester linker, a thioester linker, an alkylamine linker, an arylamine linker, an ether linker, and a thioether linker.

84. (Withdrawn) The substrate of claim 56, wherein the fluorophore is attached to the peptide by a linker selected from the group consisting of N-methyl glycine, L-proline, D-proline,



and

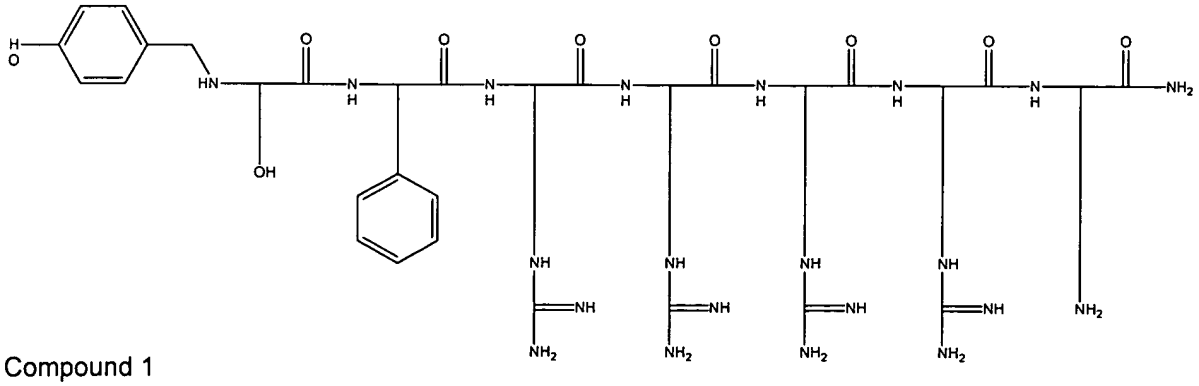


85. (Canceled)

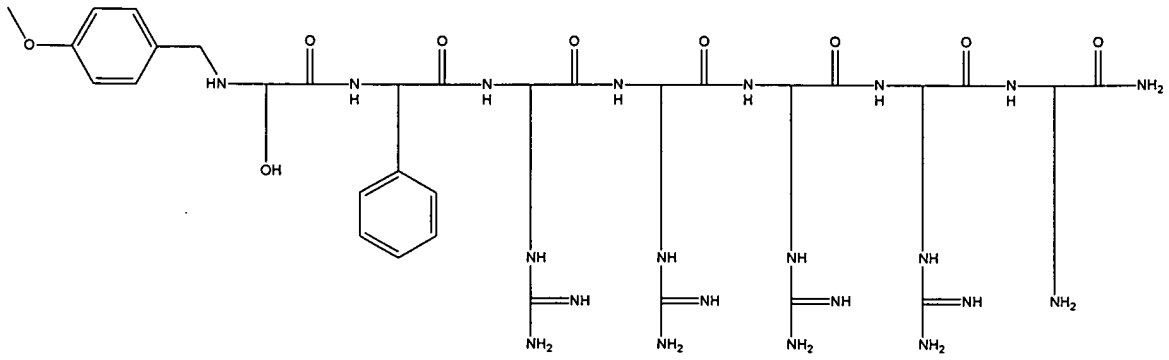
86. (Previously presented) A composition comprising the substrate of claim 56, and a carrier.

87. (Original) The composition of claim 86, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

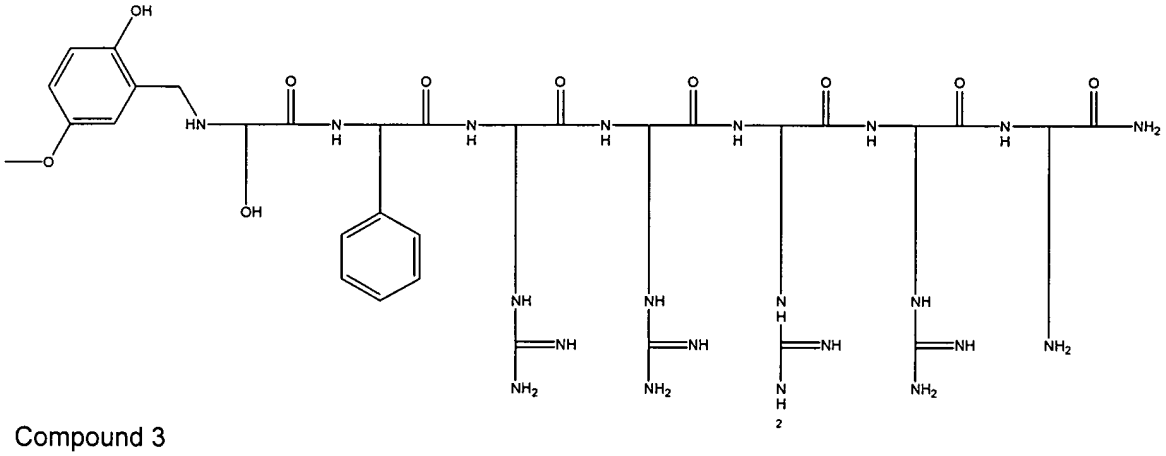
88. (Currently amended) A chemical compound selected from the group of compounds consisting of: ~~set forth in Table 3.~~



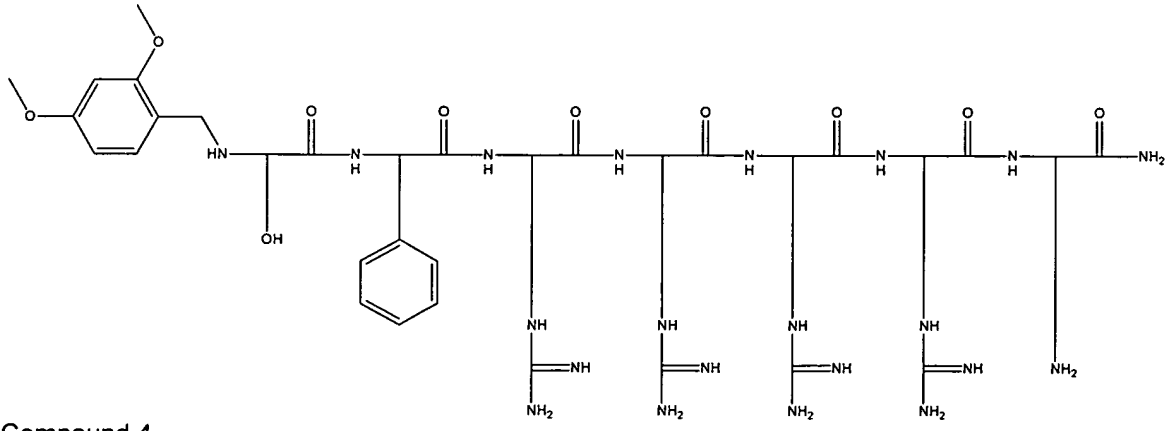
Compound 1



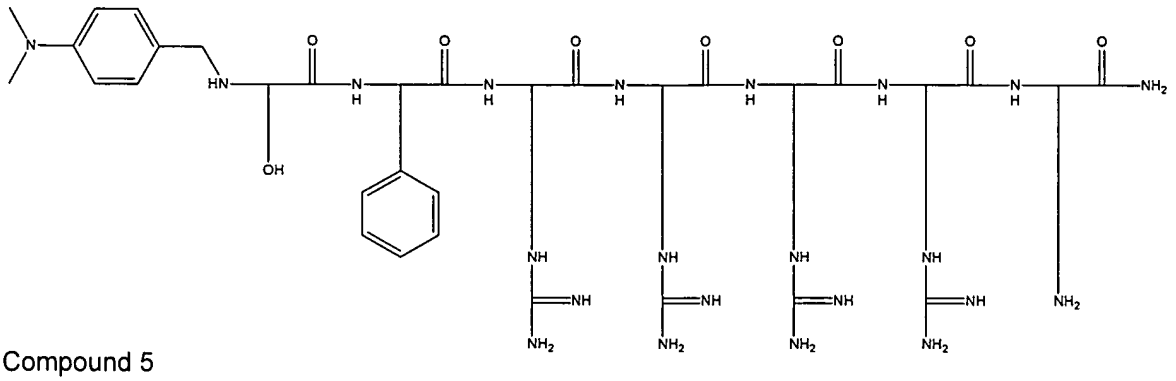
Compound 2



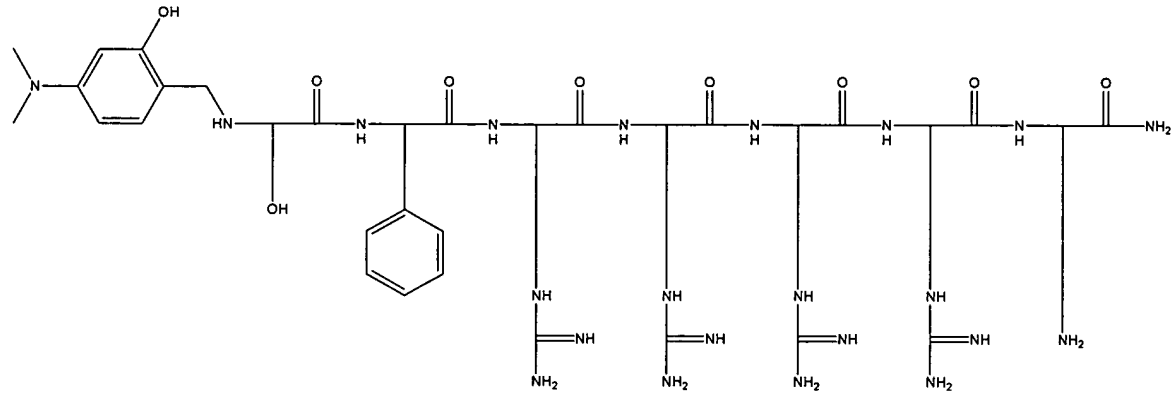
Compound 3



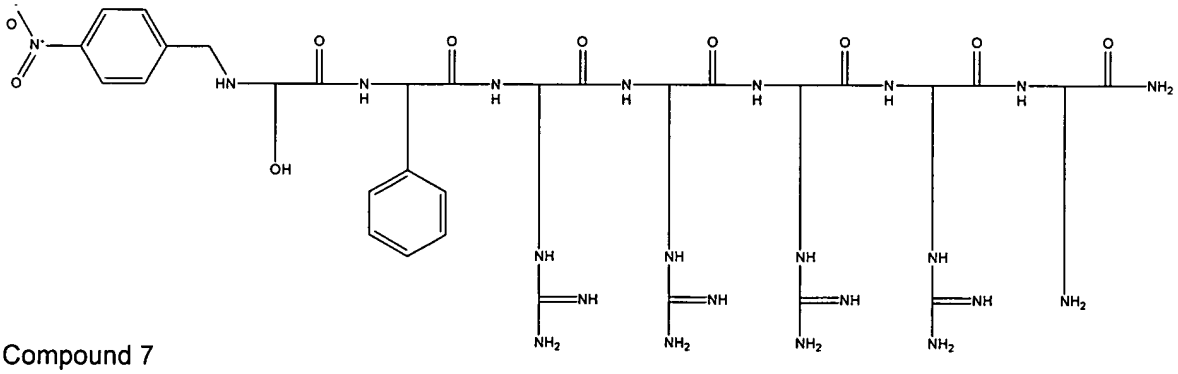
Compound 4



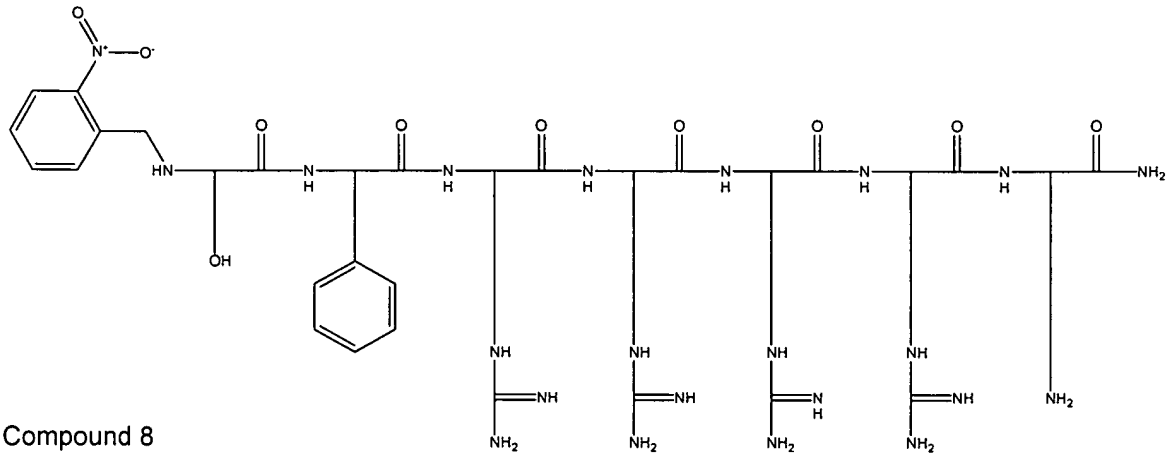
Compound 5



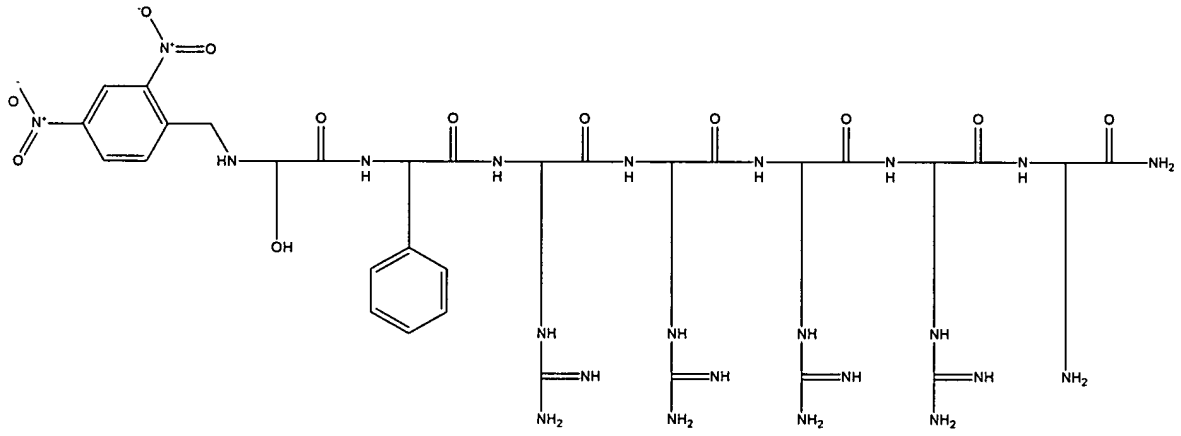
Compound 6



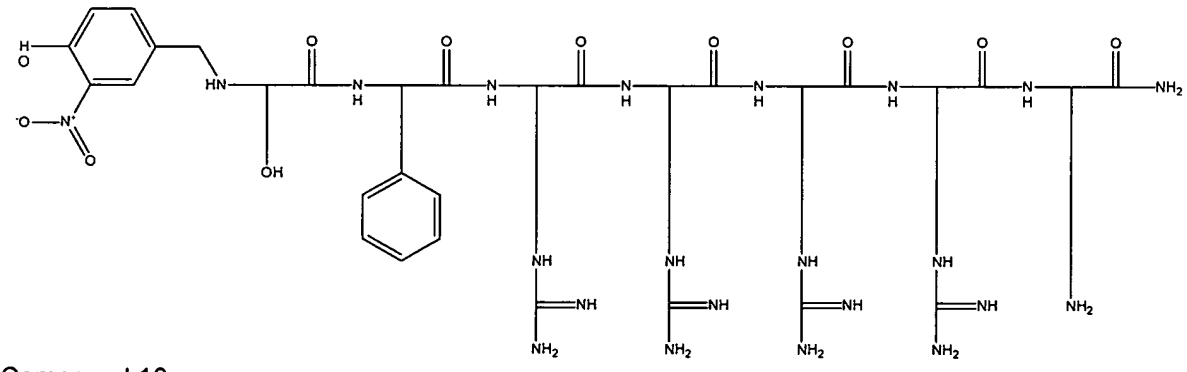
Compound 7



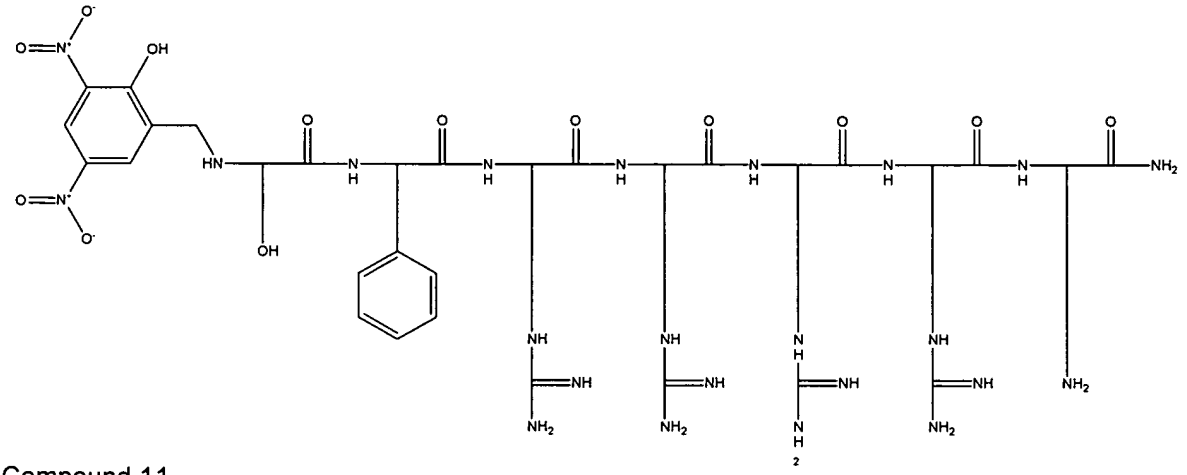
Compound 8



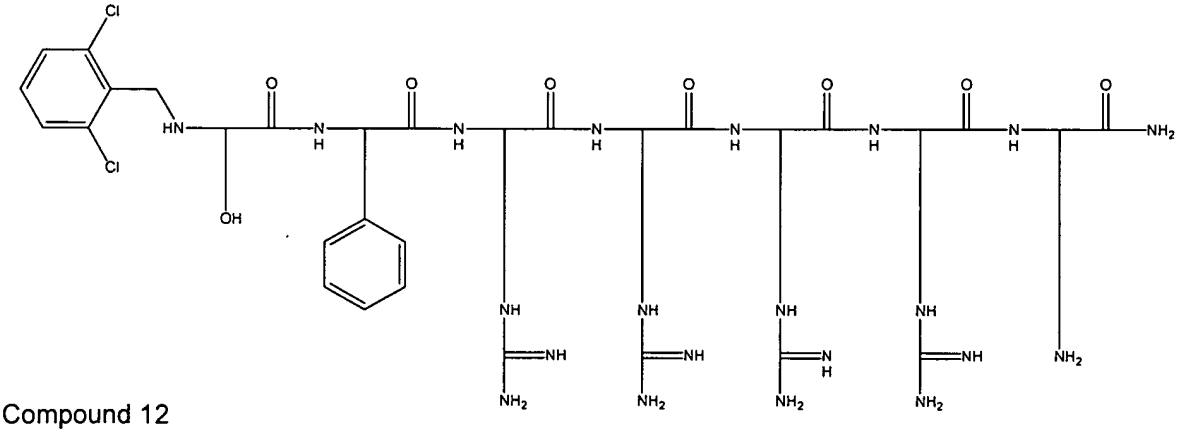
Compound 9



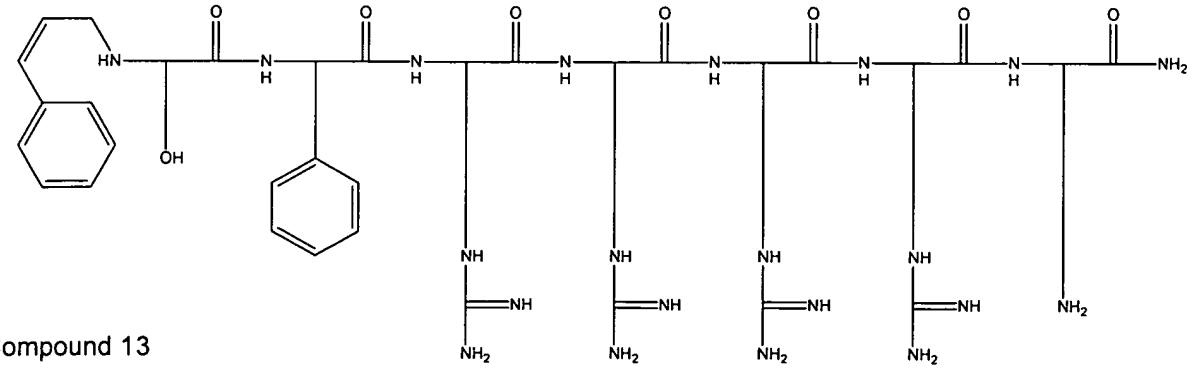
Compound 10



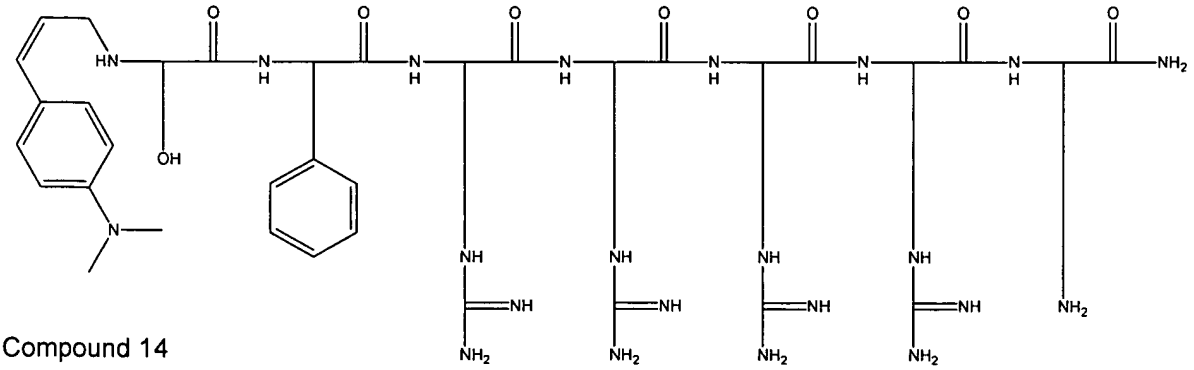
Compound 11



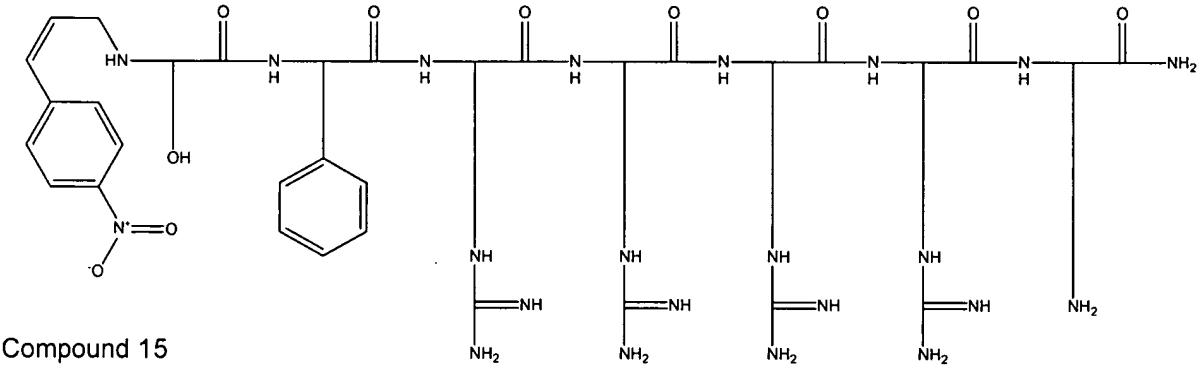
Compound 12



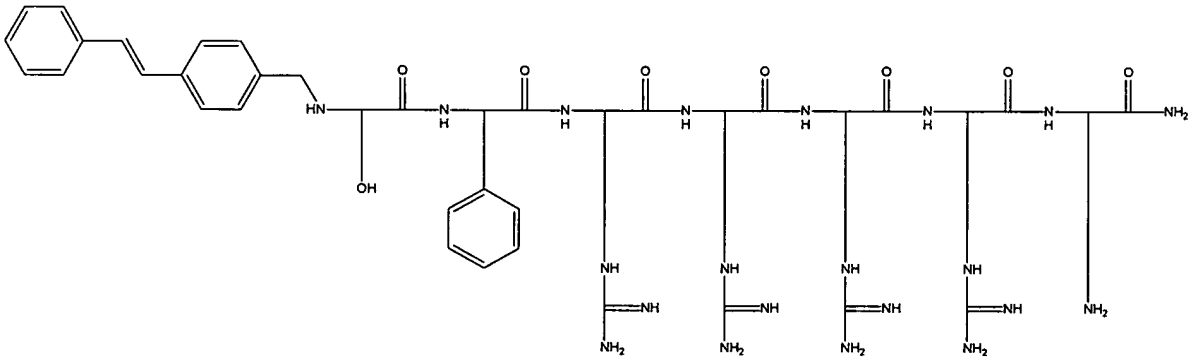
Compound 13



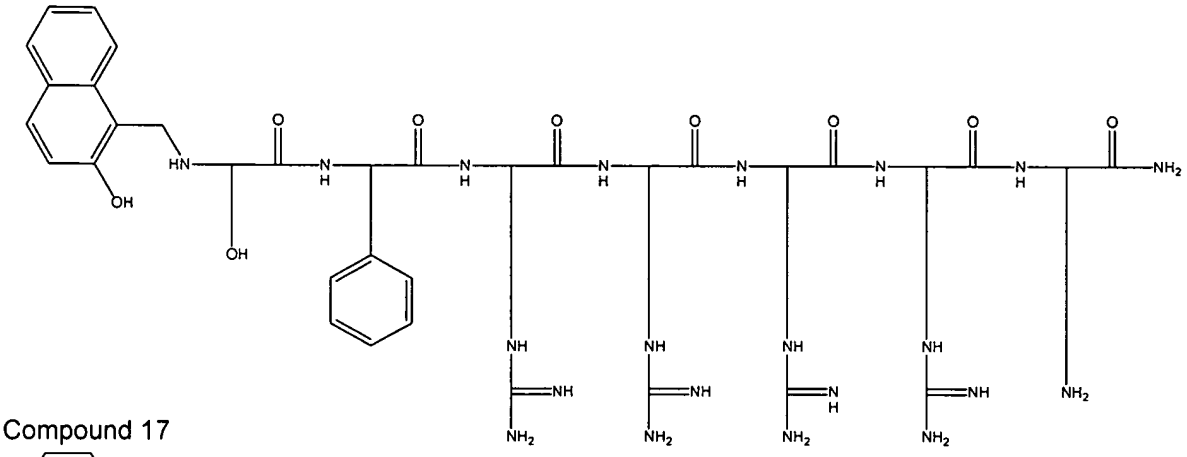
Compound 14



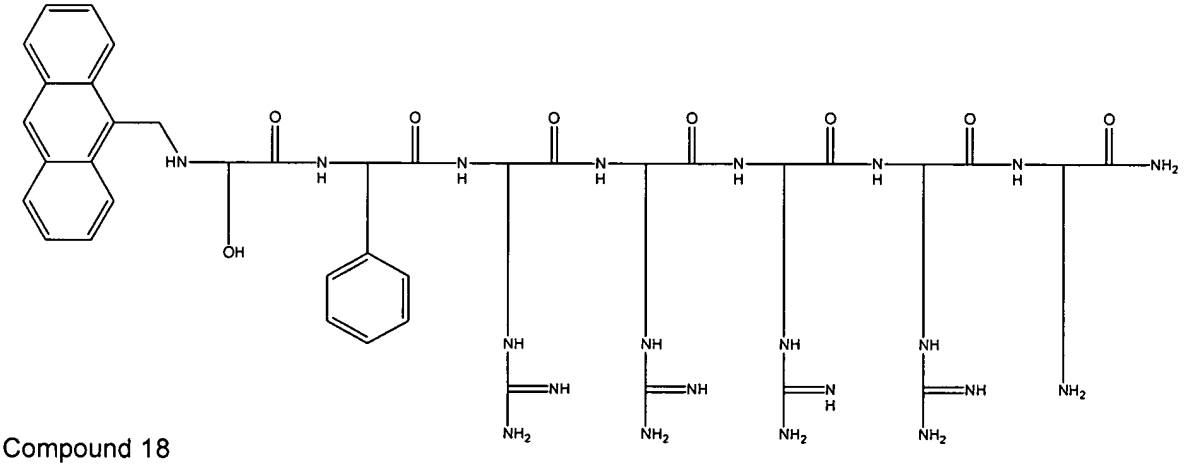
Compound 15



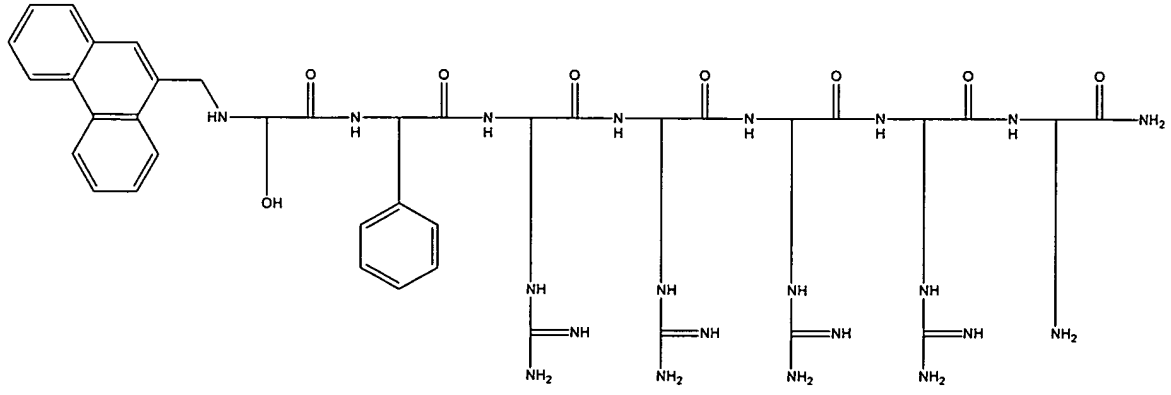
Compound 16



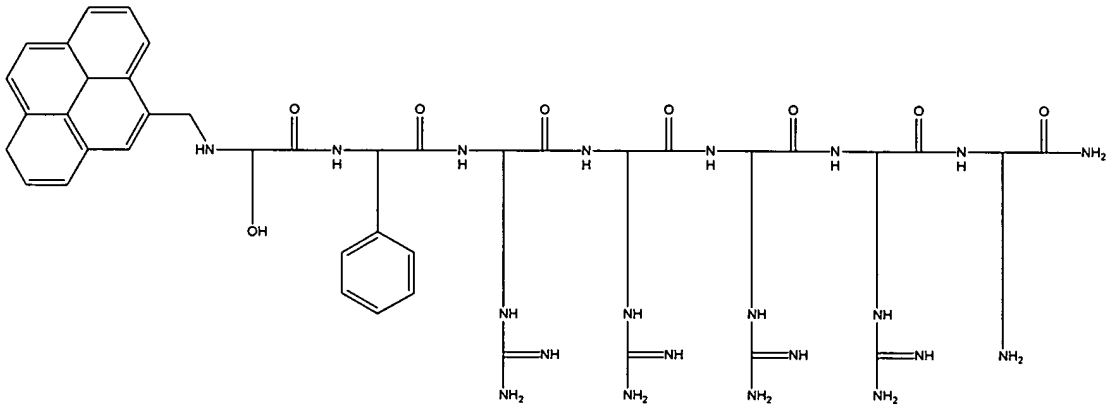
Compound 17



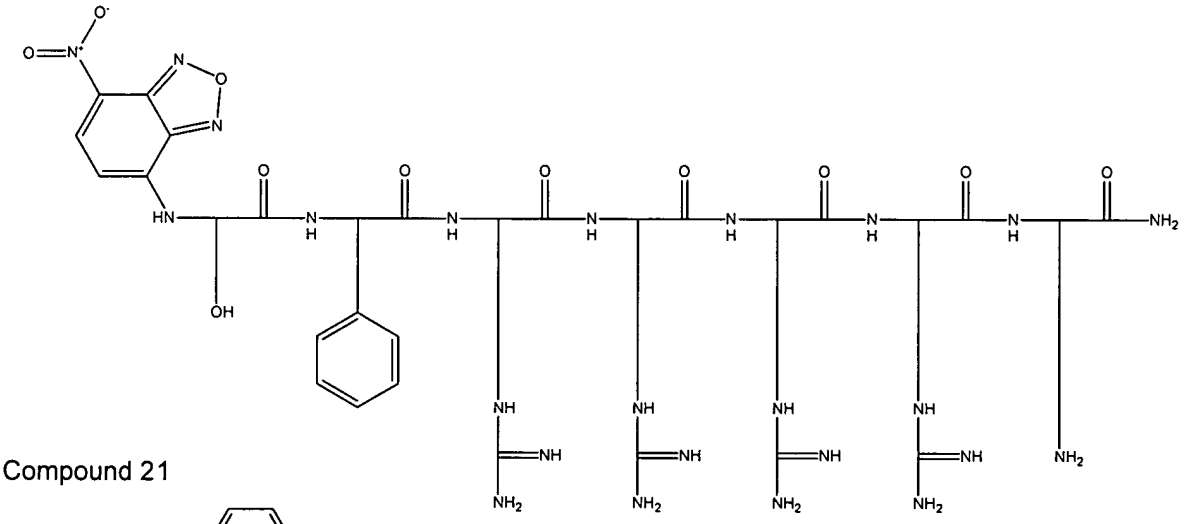
Compound 18



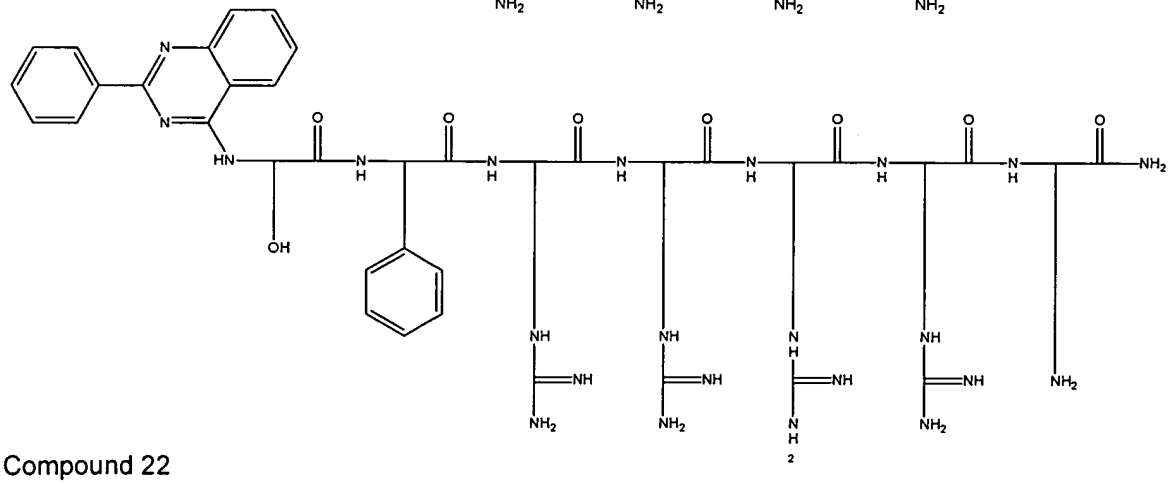
Compound 19



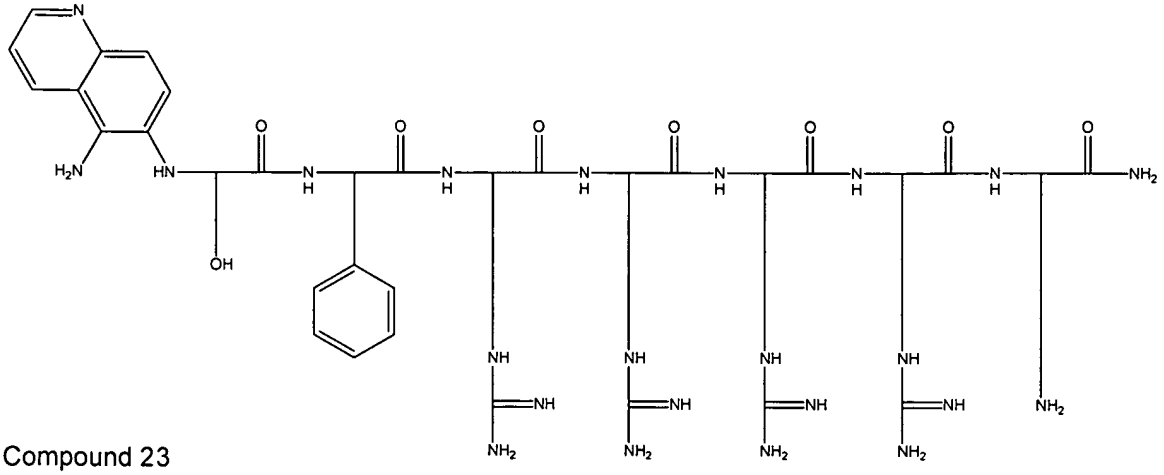
Compound 20



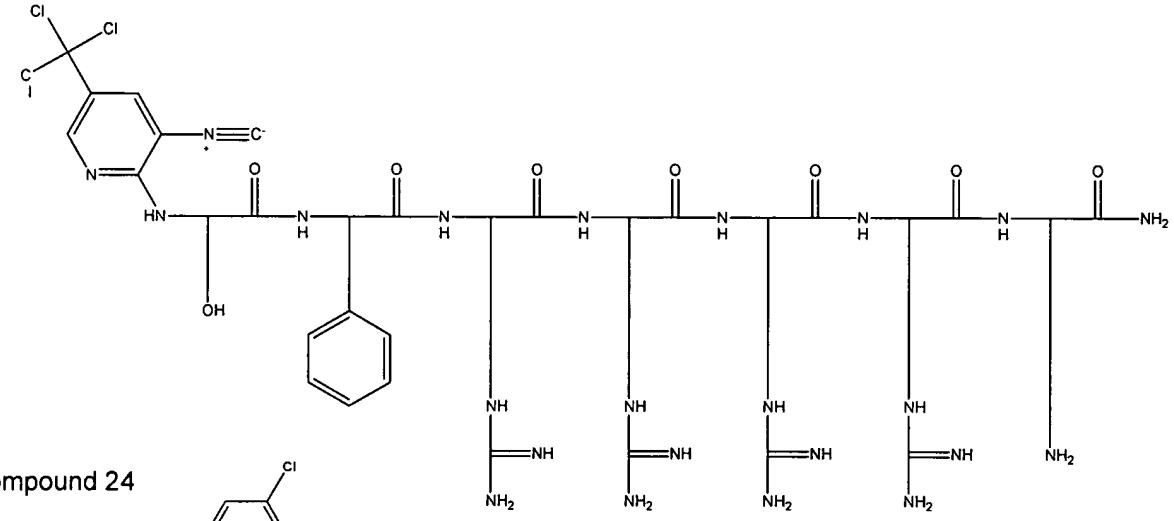
Compound 21



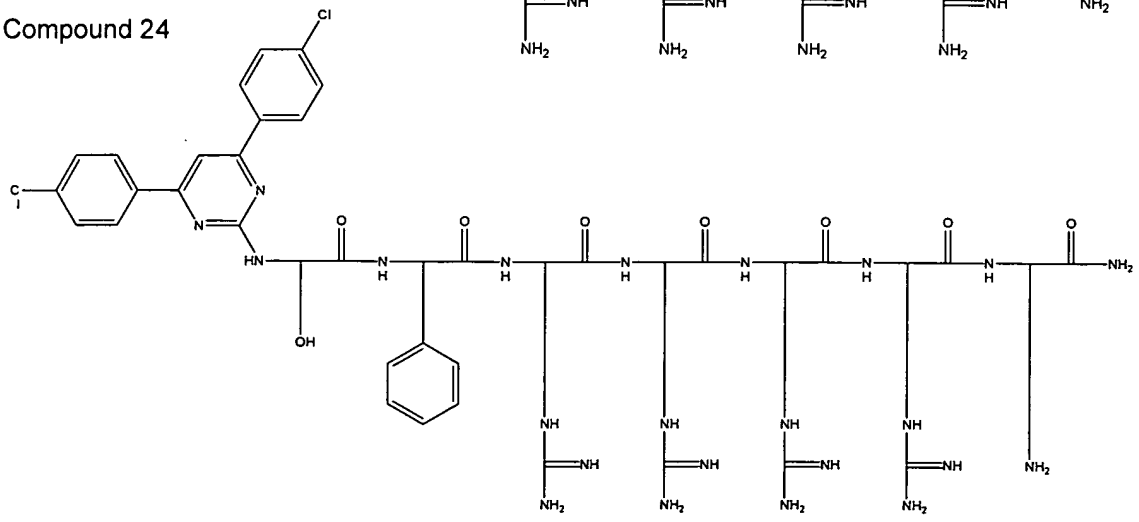
Compound 22



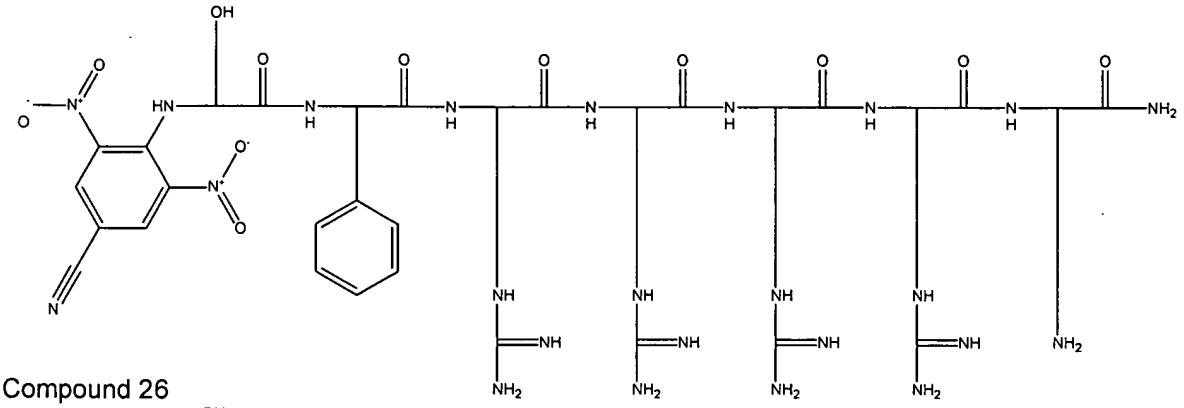
Compound 23



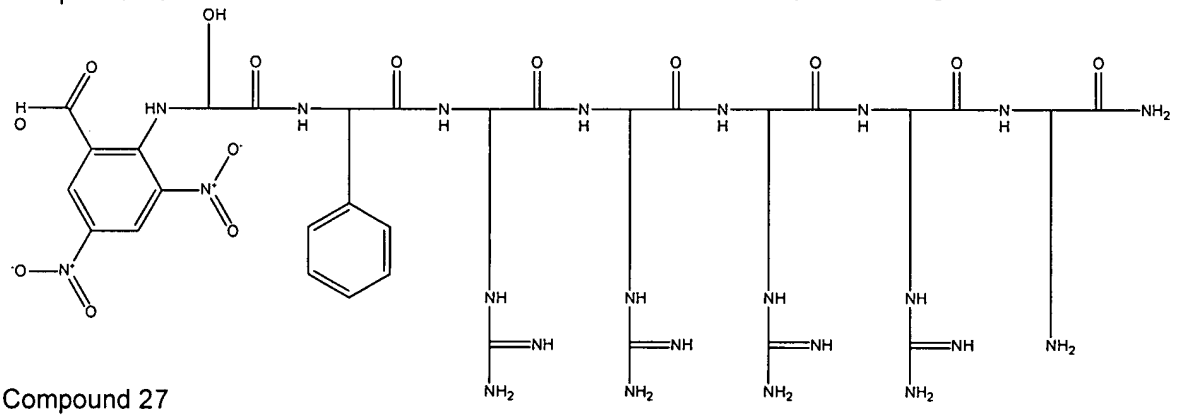
Compound 24



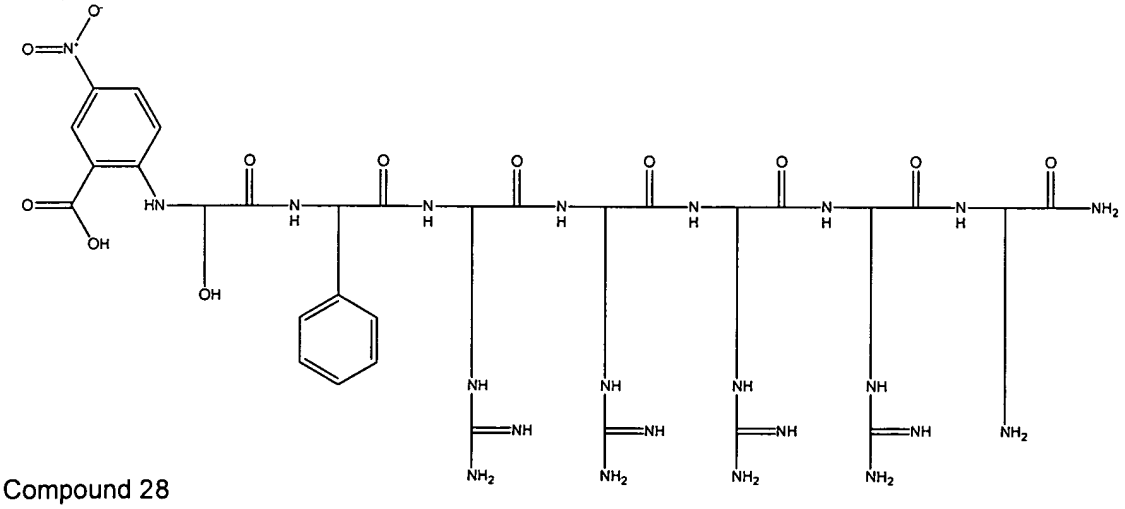
Compound 25



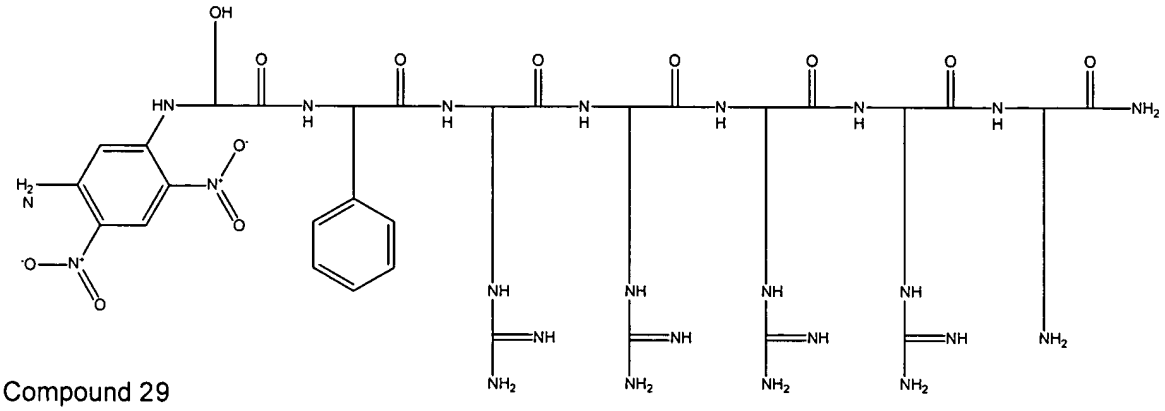
Compound 26



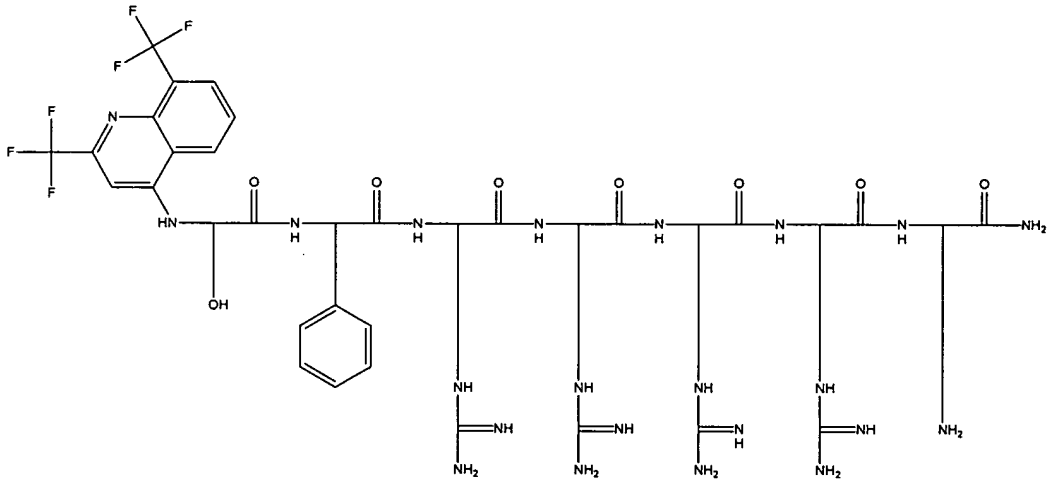
Compound 27



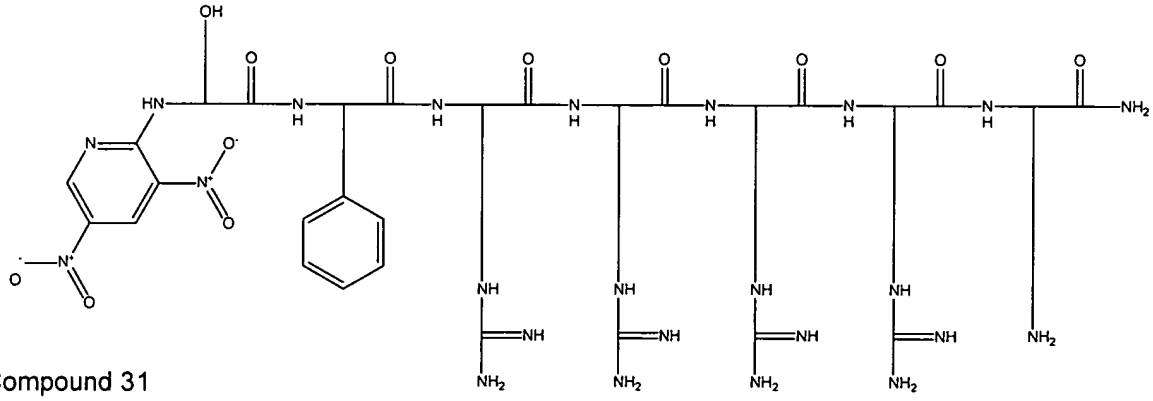
Compound 28



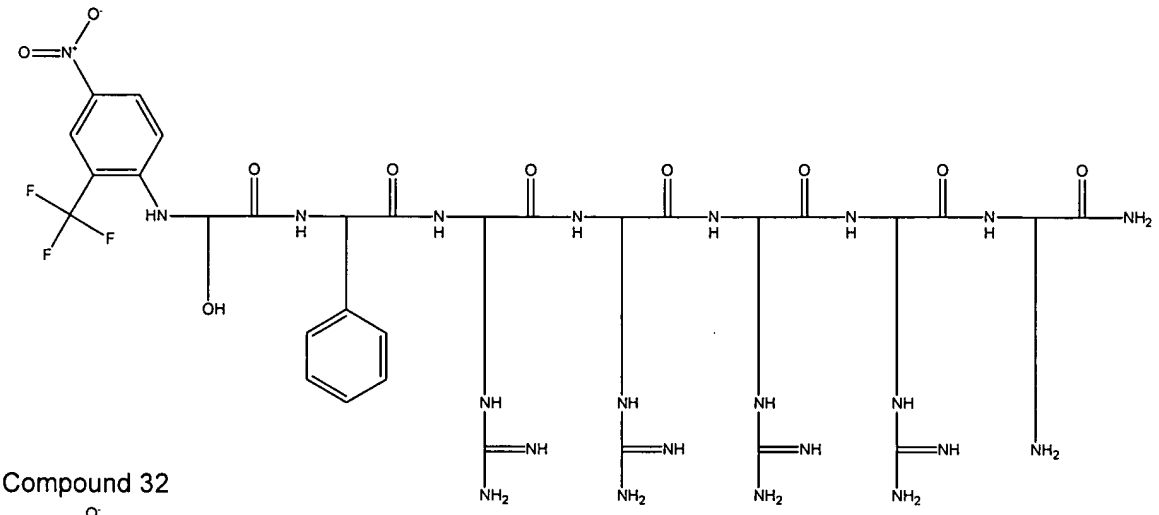
Compound 29



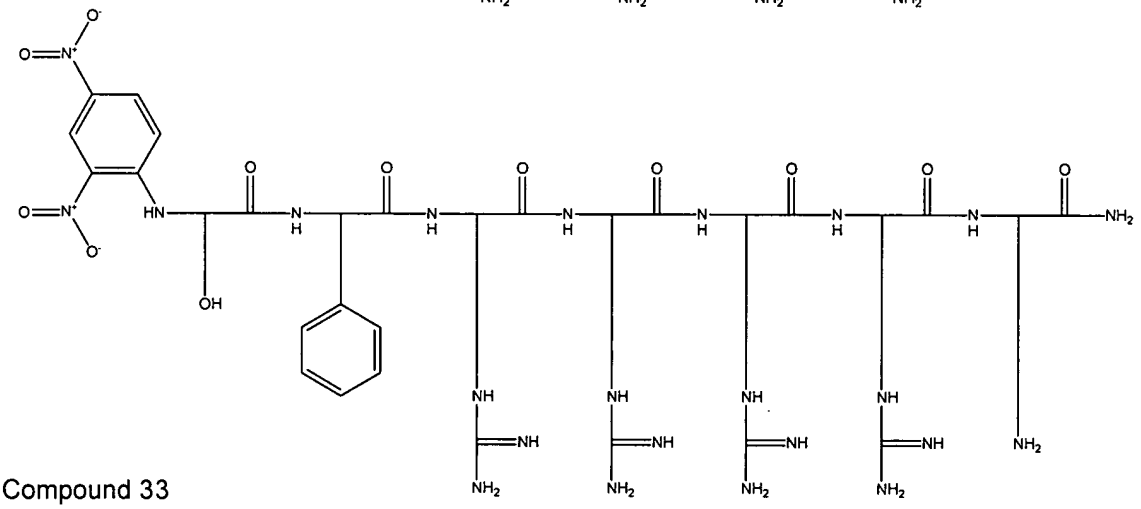
Compound 30



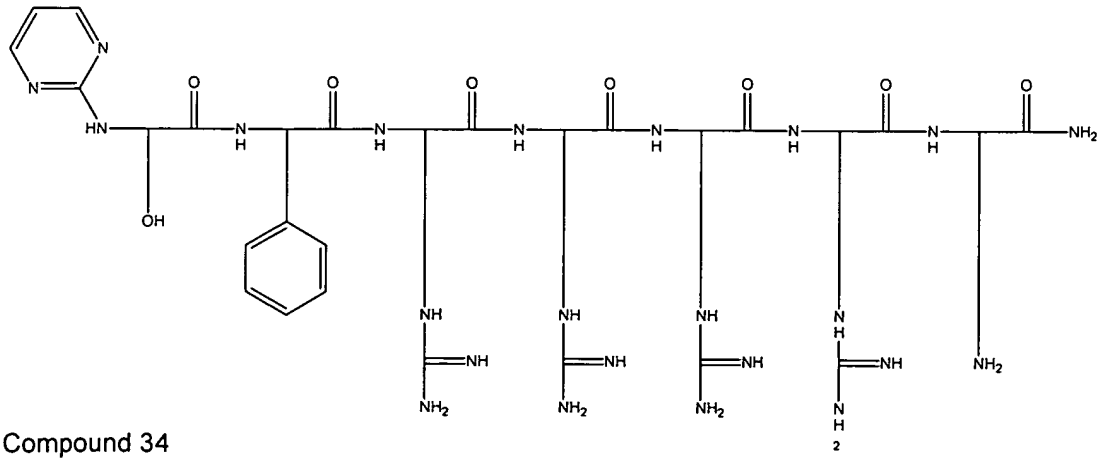
Compound 31



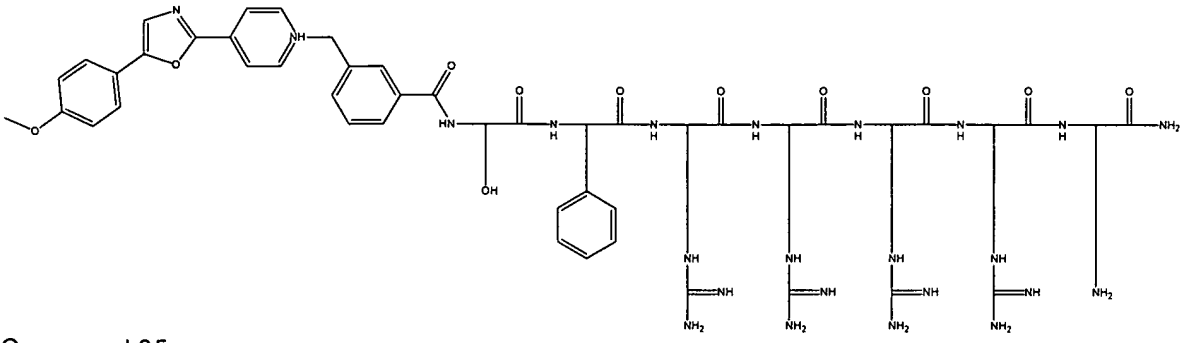
Compound 32



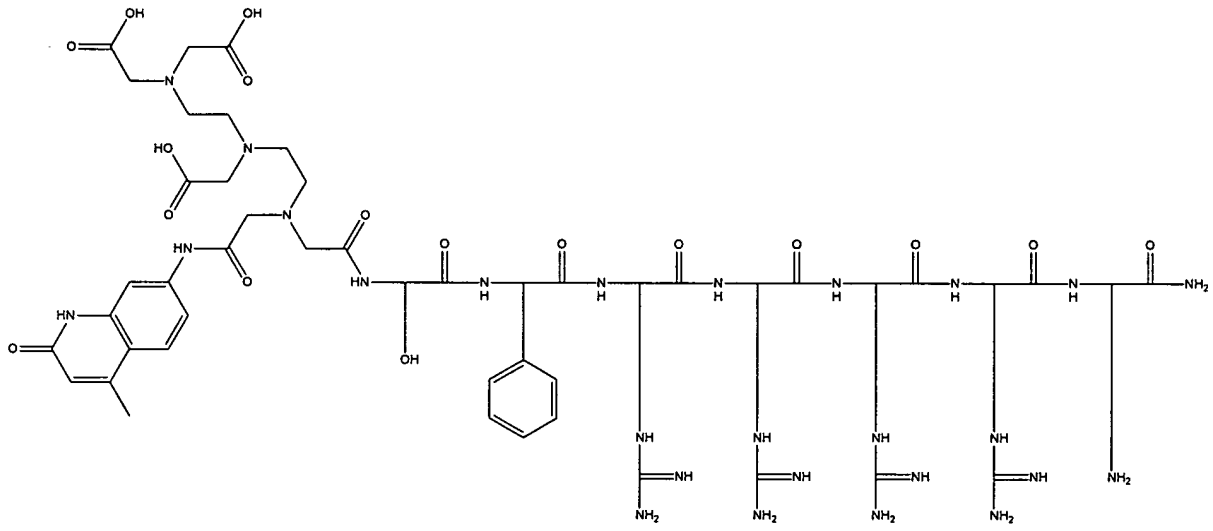
Compound 33



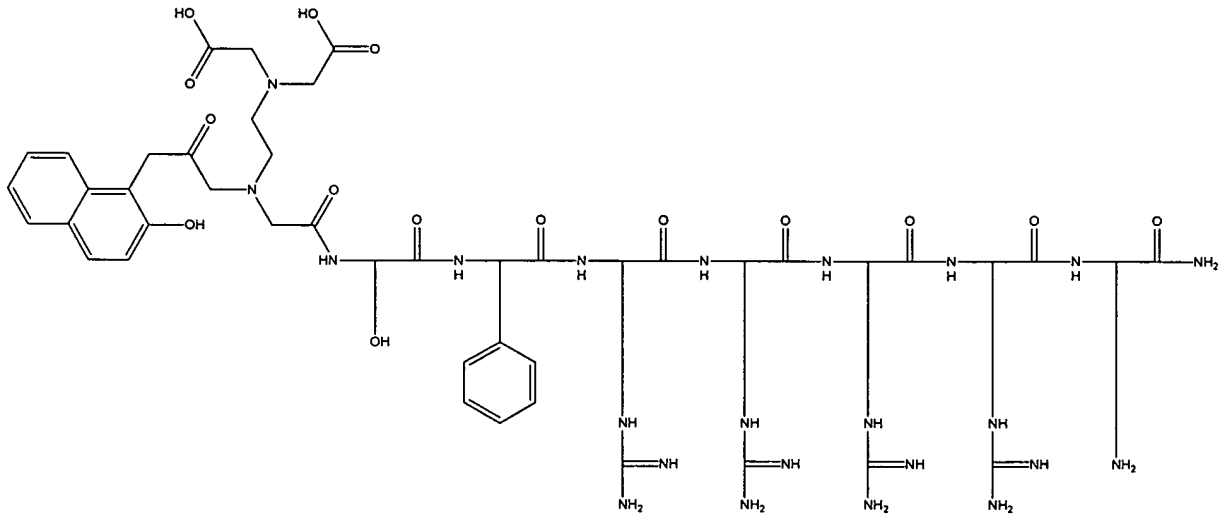
Compound 34



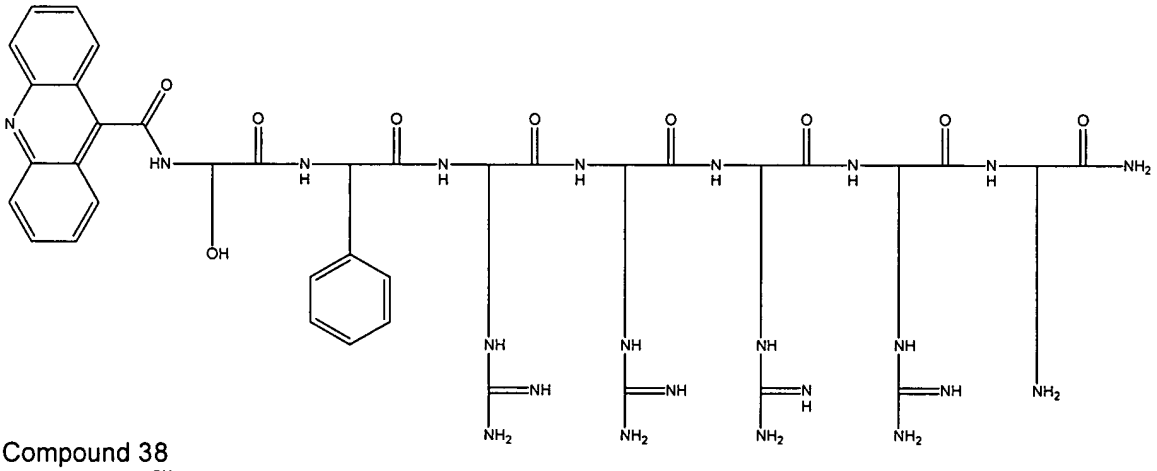
Compound 35



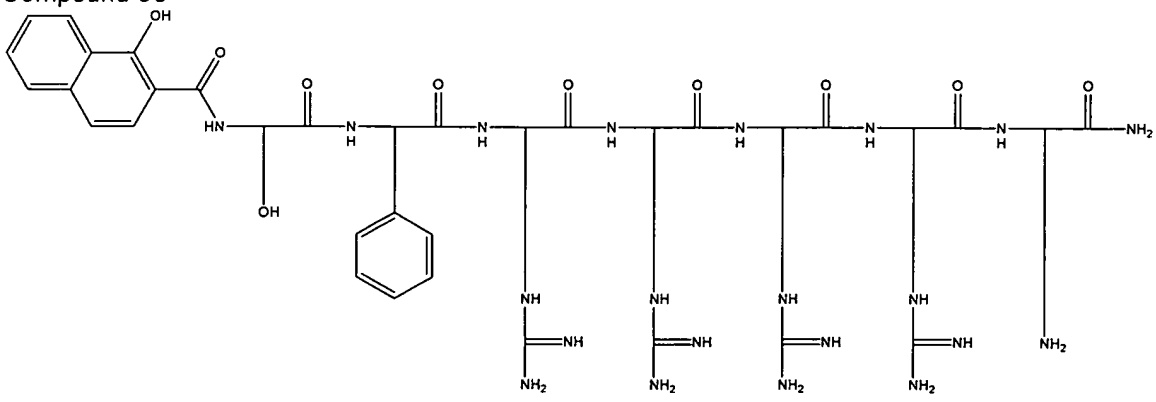
Compound 36



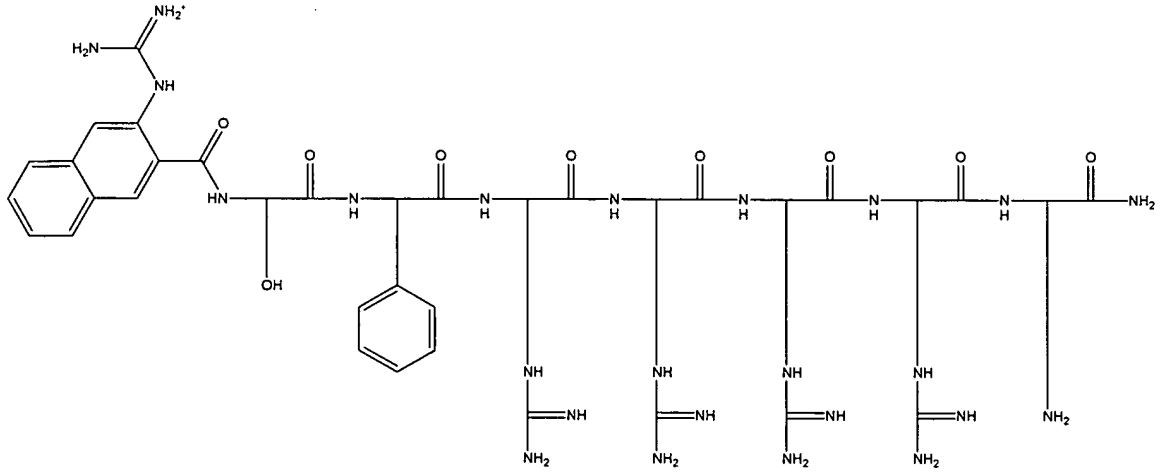
Compound 37



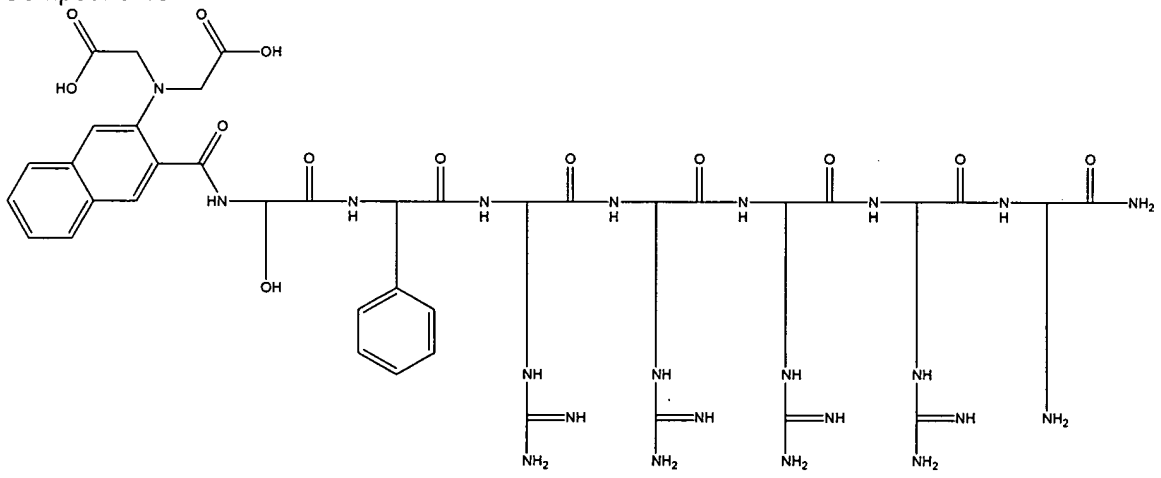
Compound 38



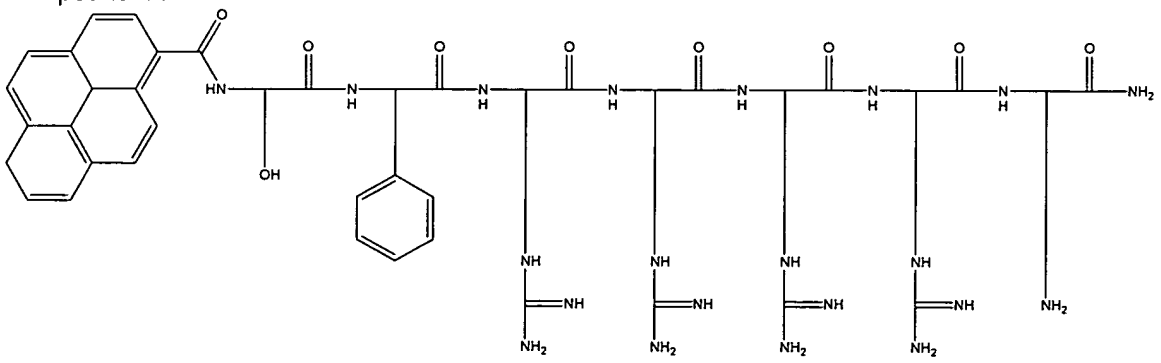
Compound 39



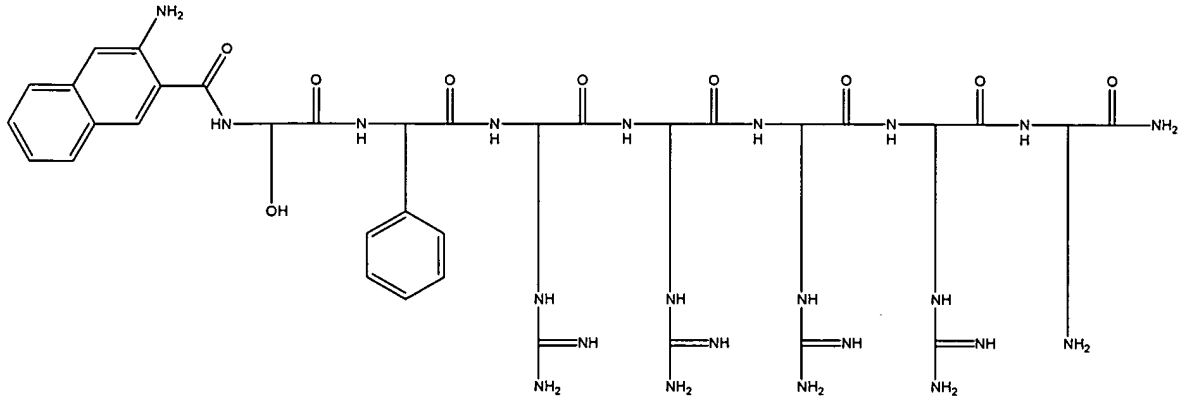
Compound 40



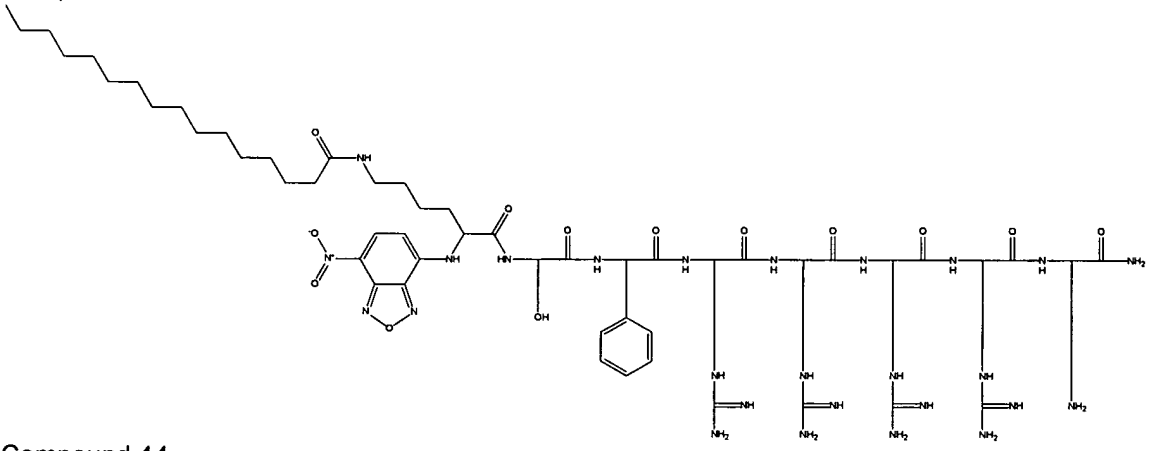
Compound 41



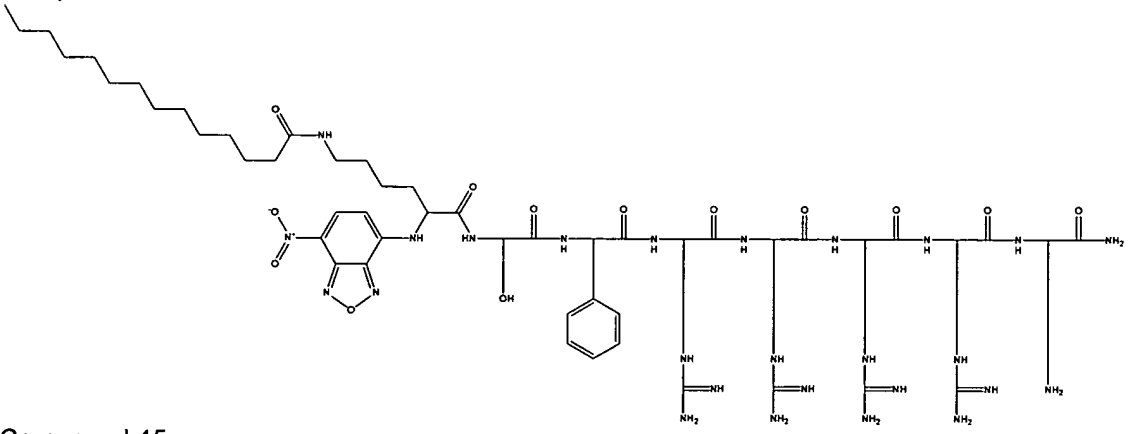
Compound 42



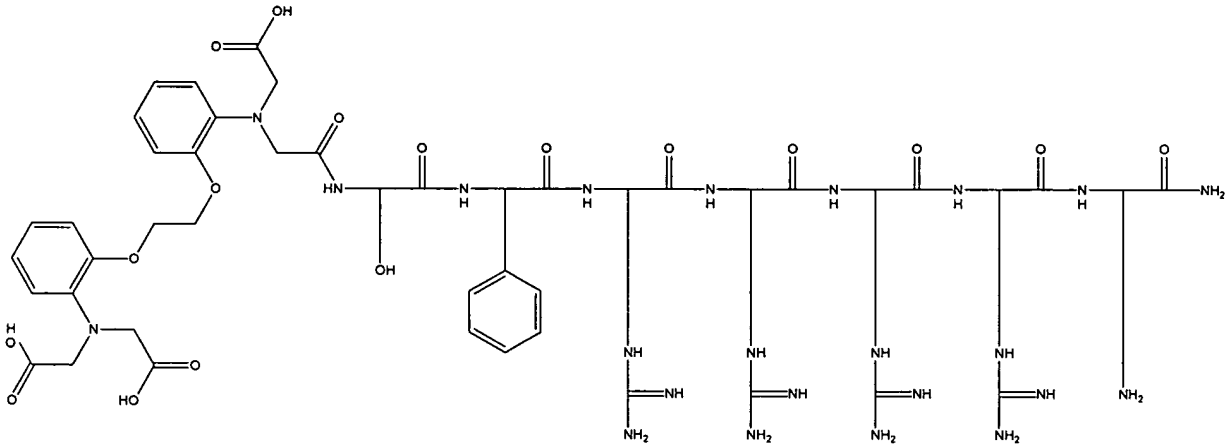
Compound 43



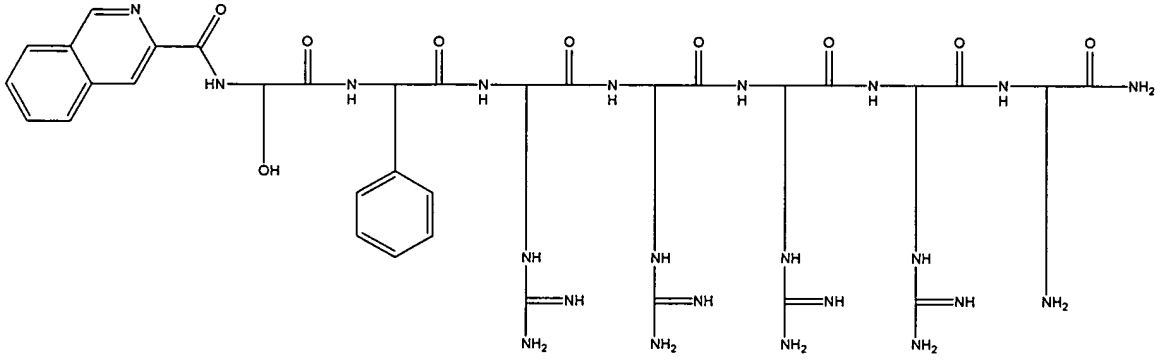
Compound 44



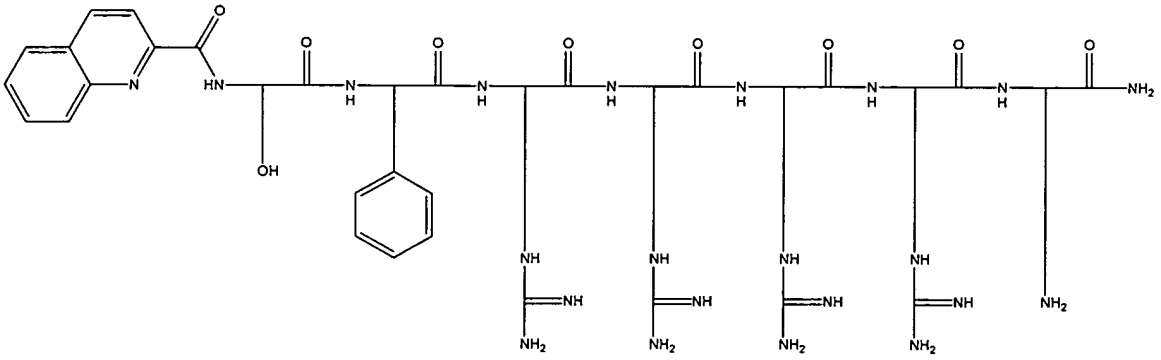
Compound 45



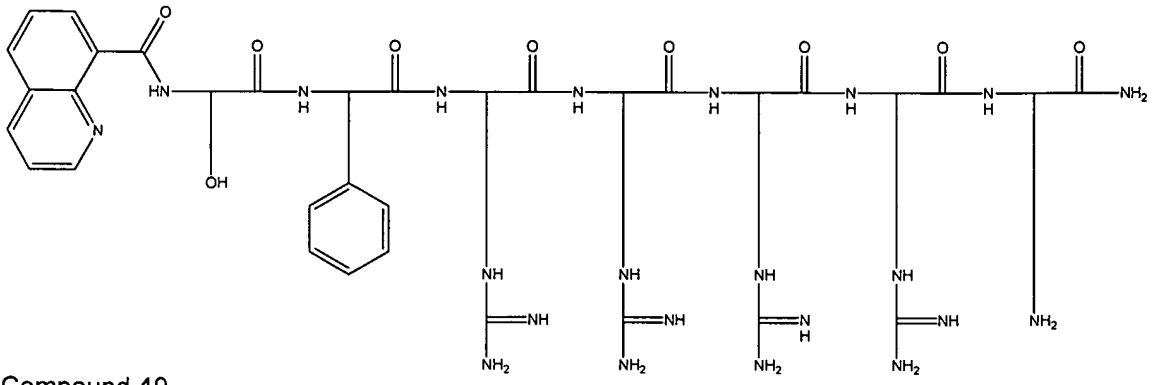
Compound 46



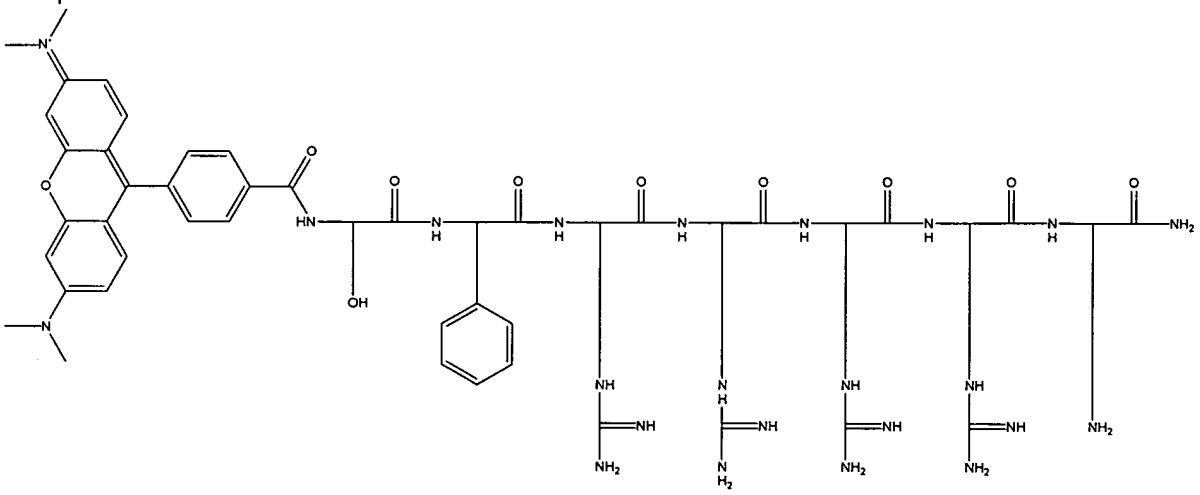
Compound 47



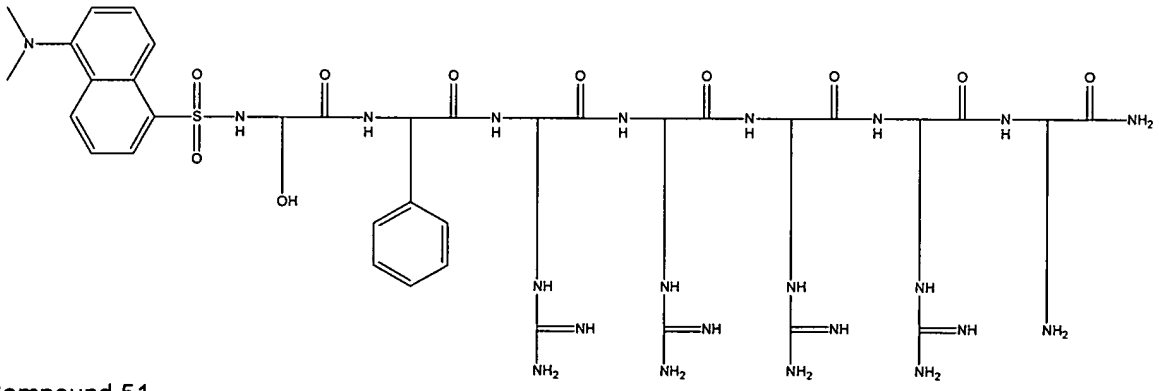
Compound 48



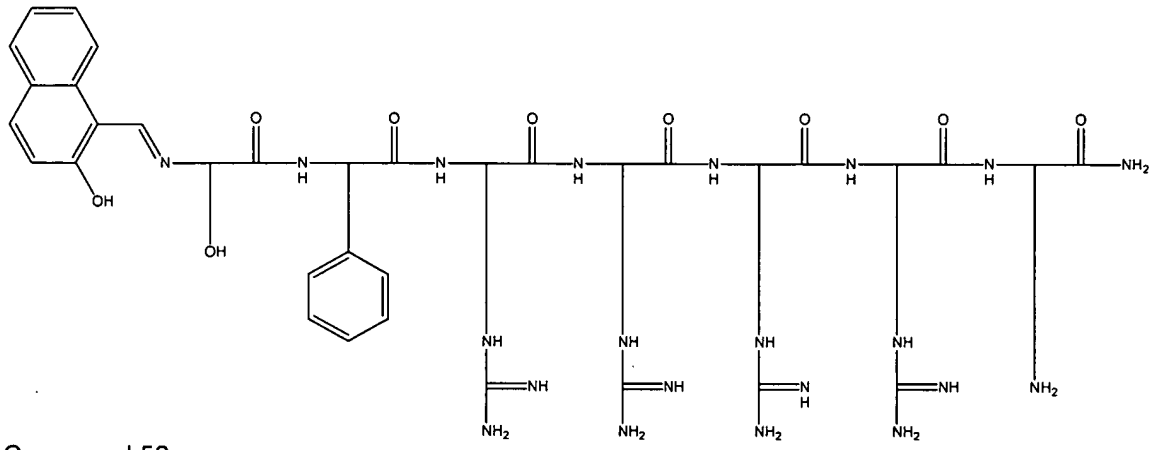
Compound 49



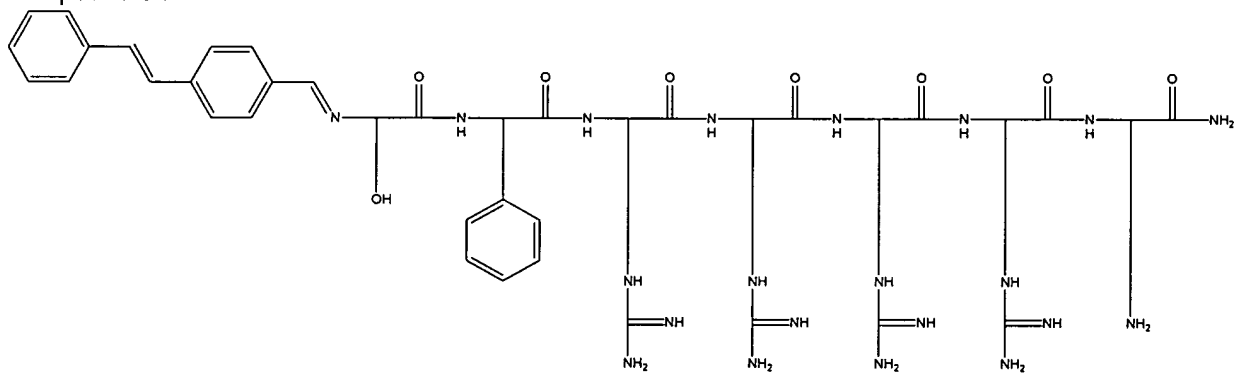
Compound 50



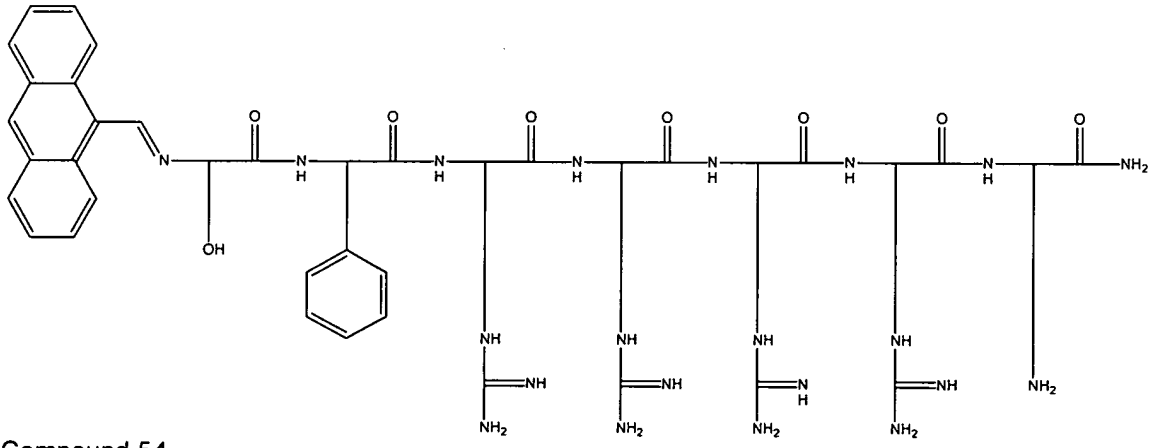
Compound 51



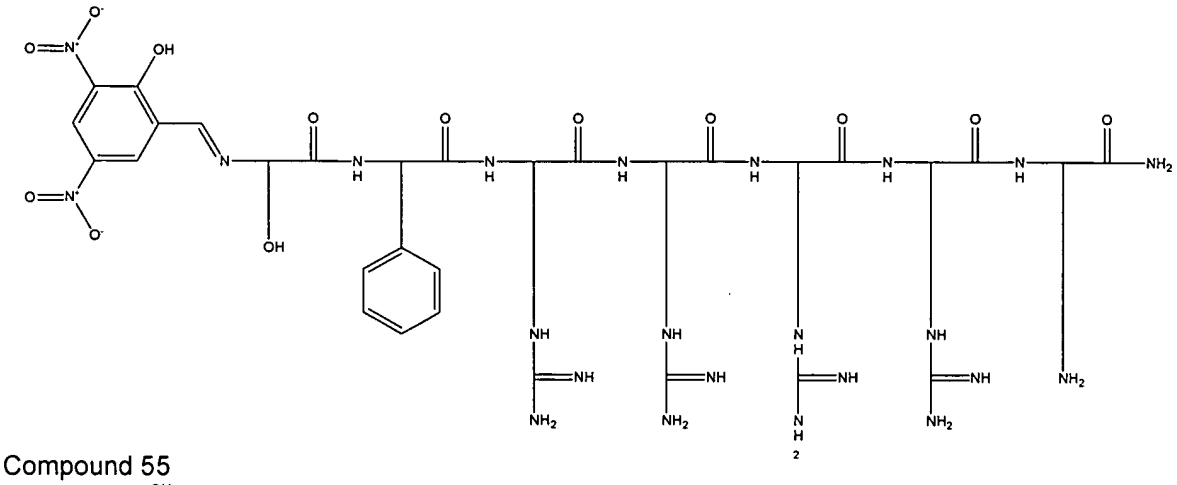
Compound 52



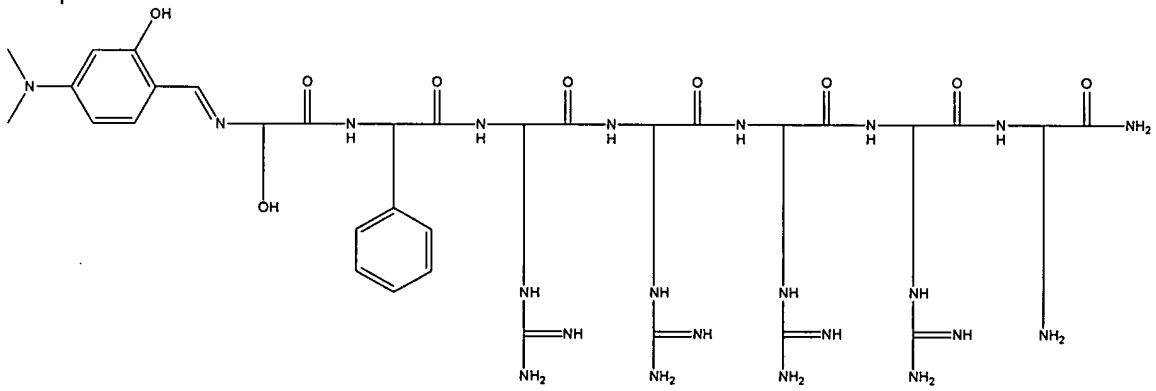
Compound 53



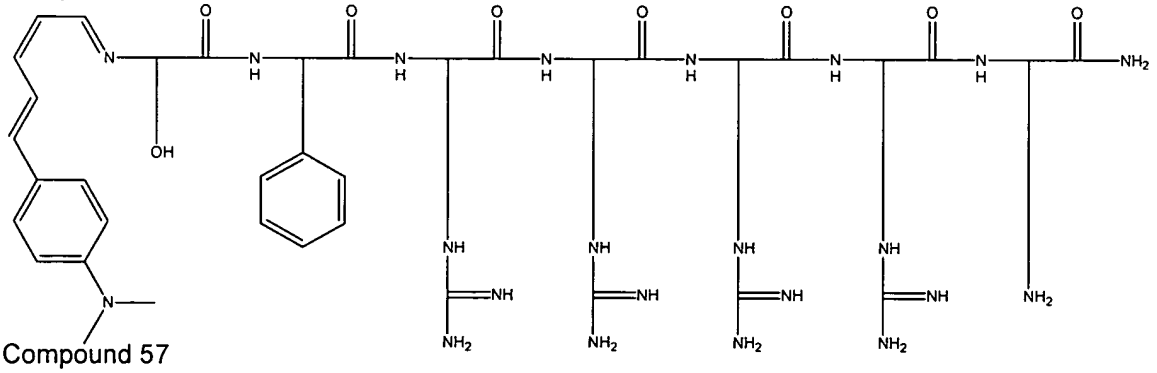
Compound 54



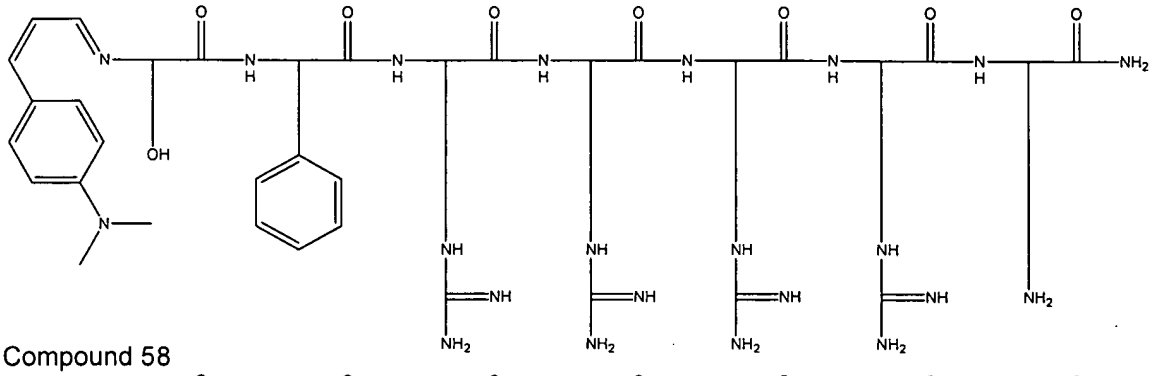
Compound 55



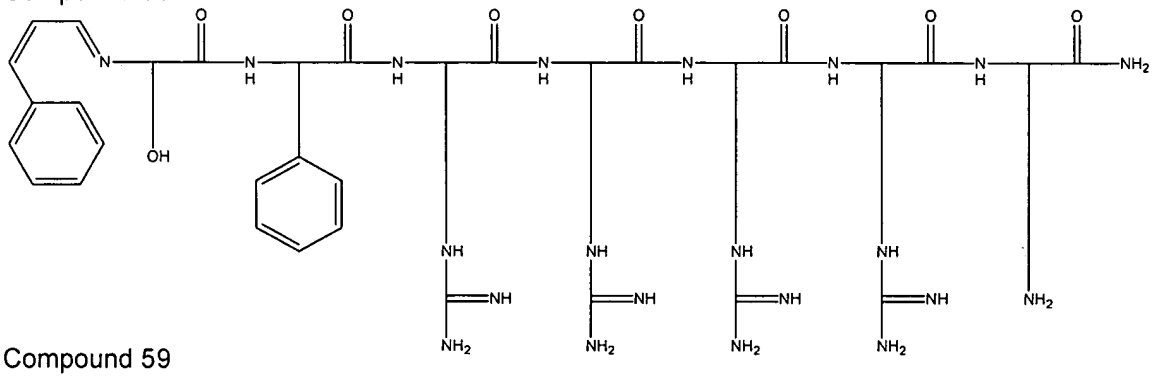
Compound 56



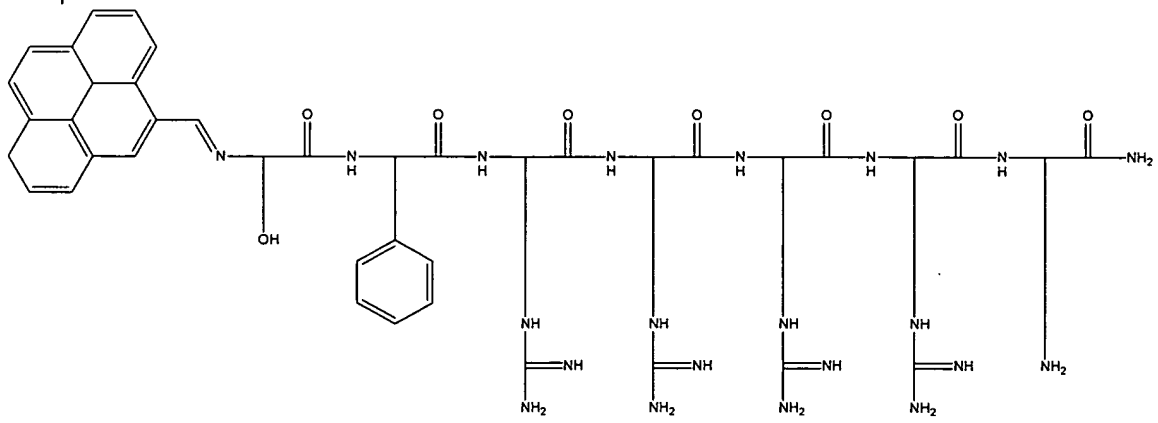
Compound 57



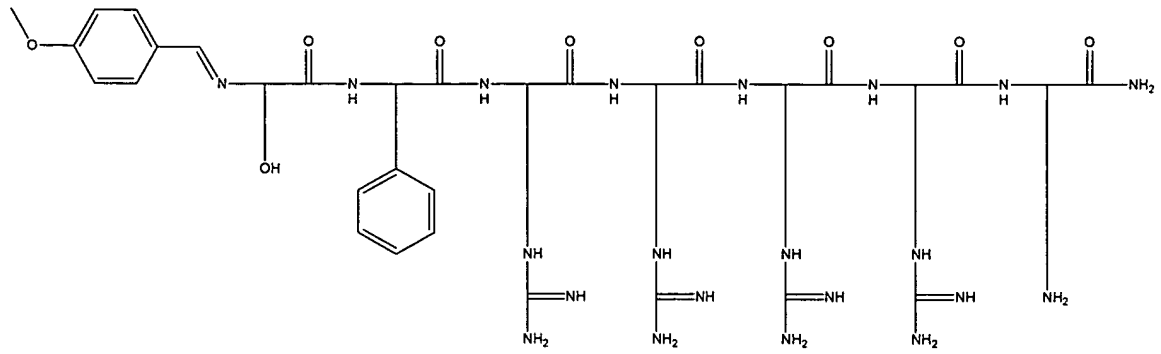
Compound 58



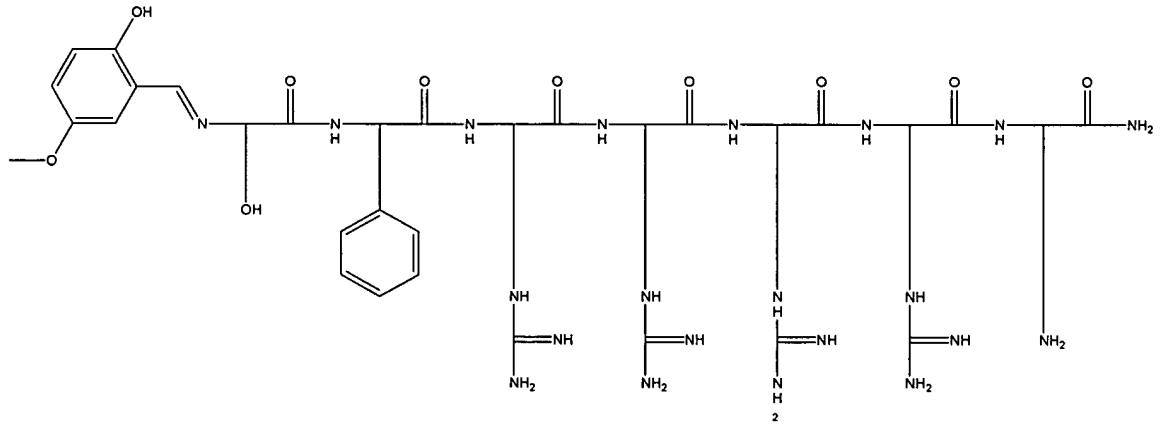
Compound 59



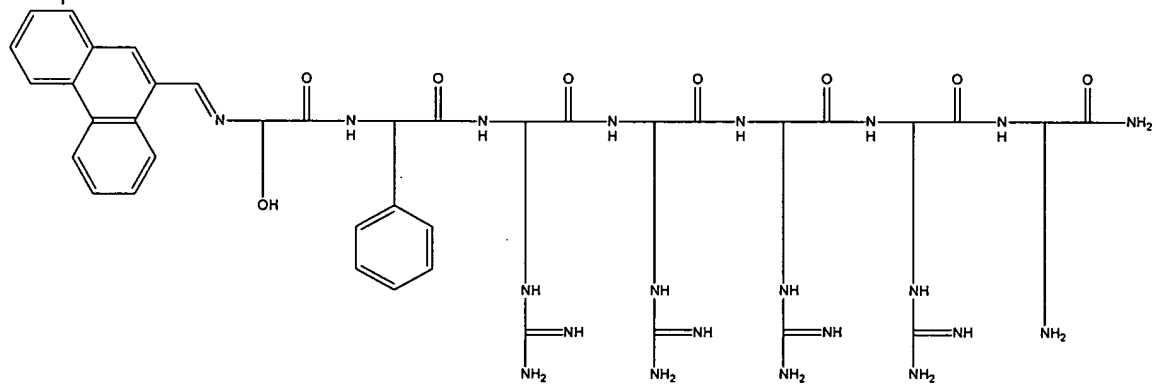
Compound 60



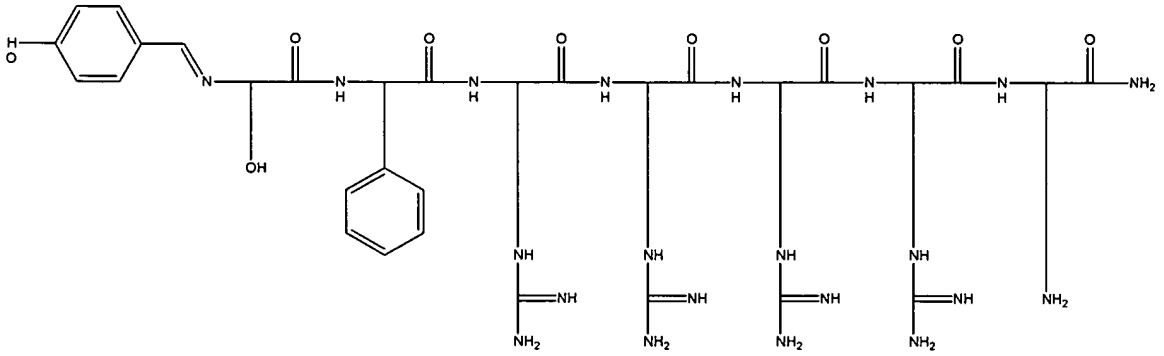
Compound 61



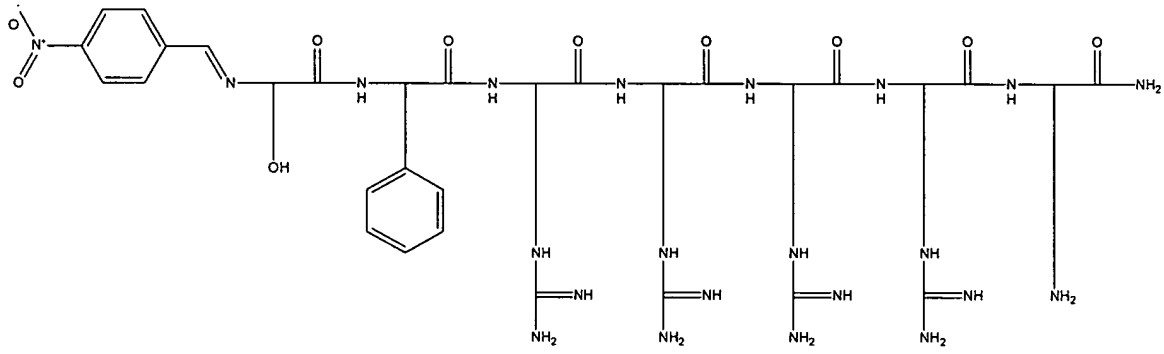
Compound 62



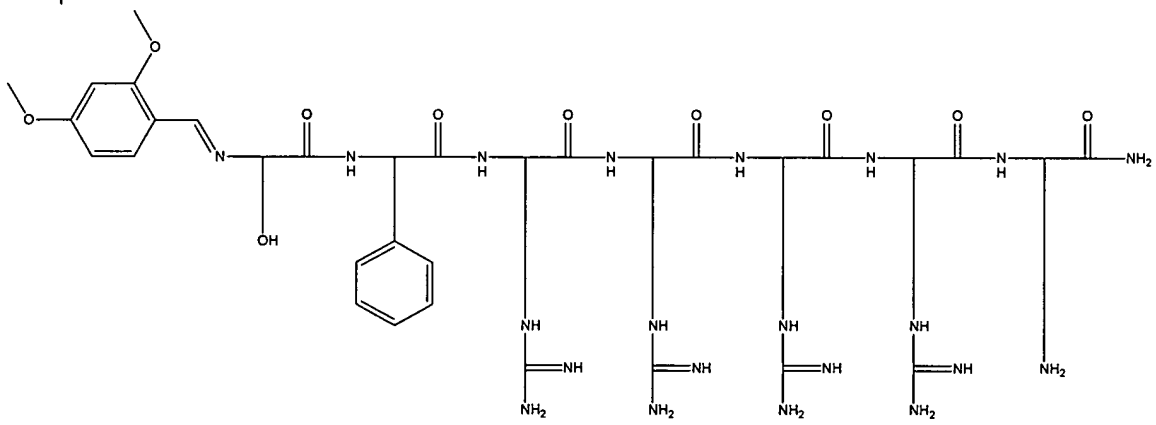
Compound 63



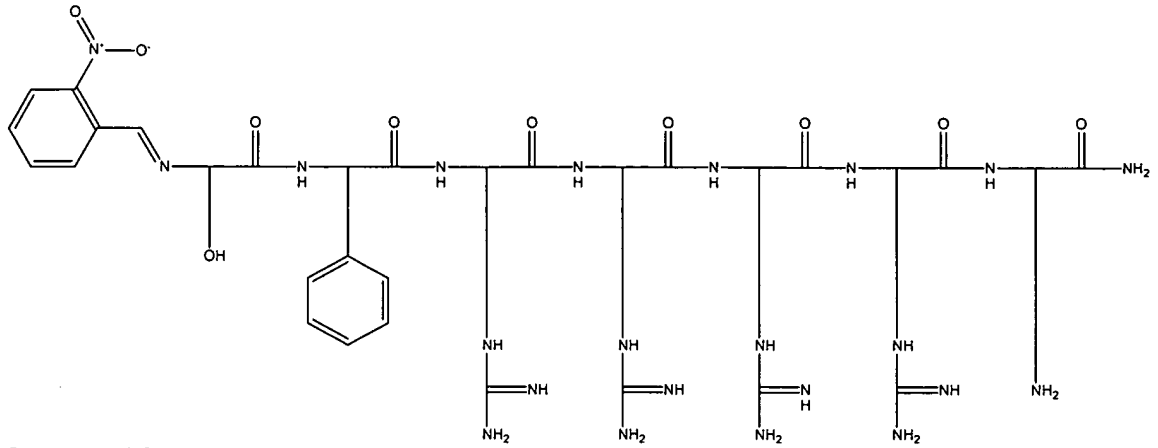
Compound 64



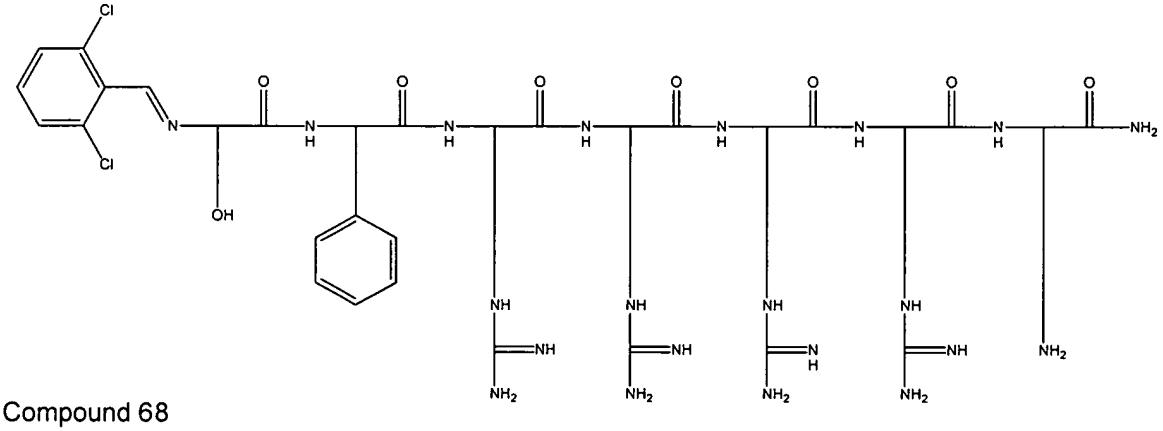
Compound 65



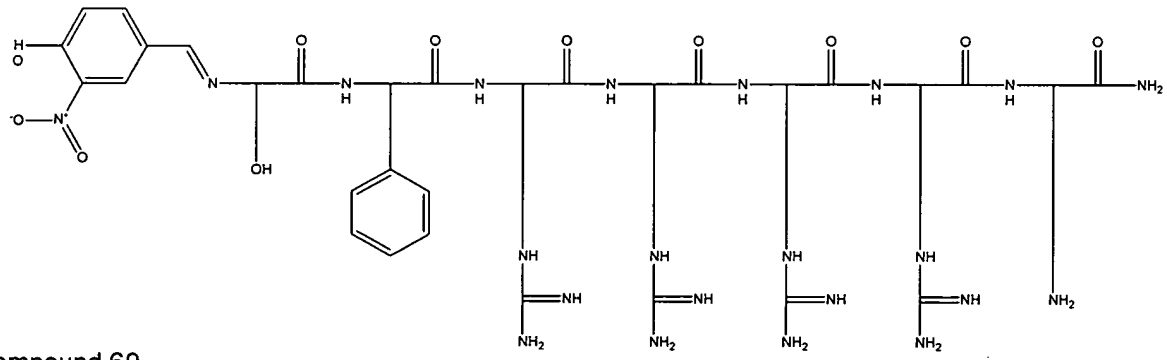
Compound 66



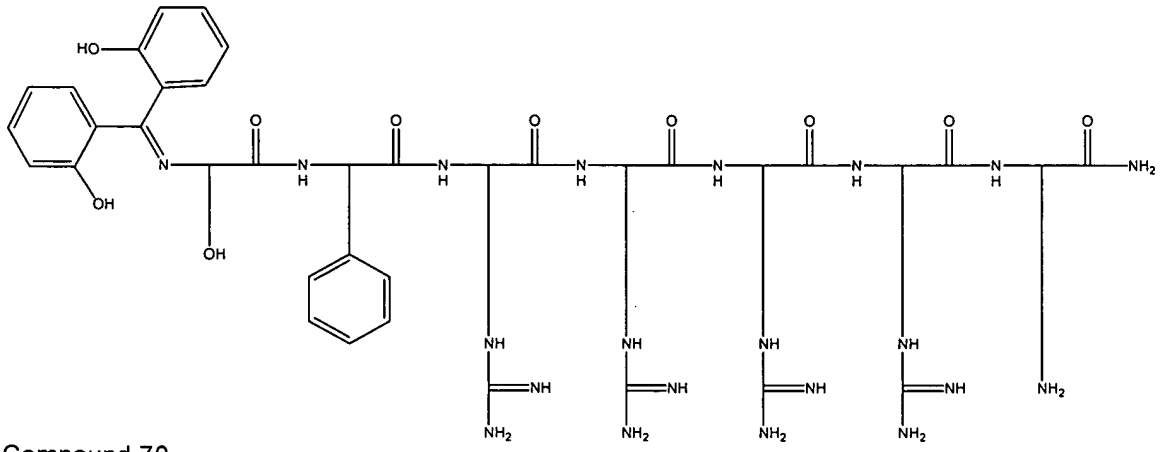
Compound 67



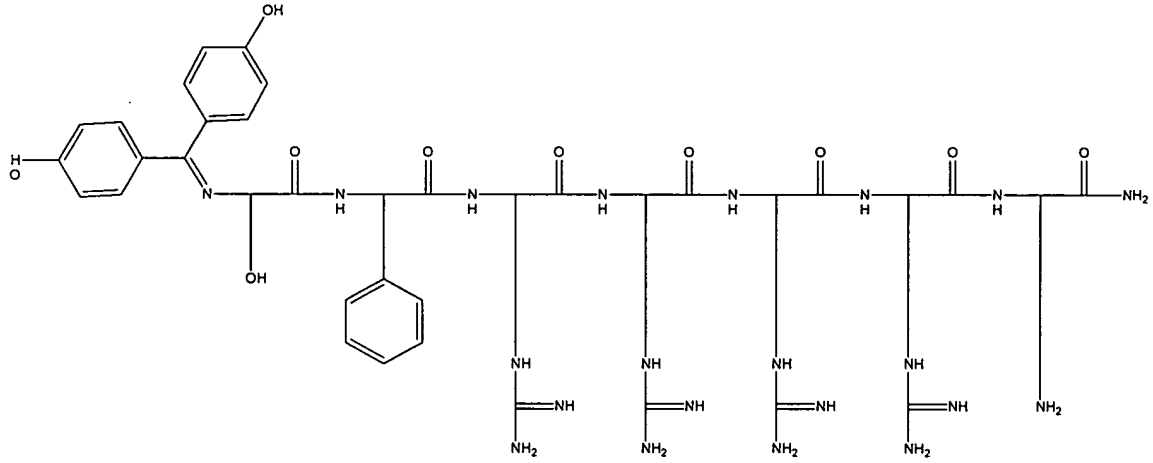
Compound 68



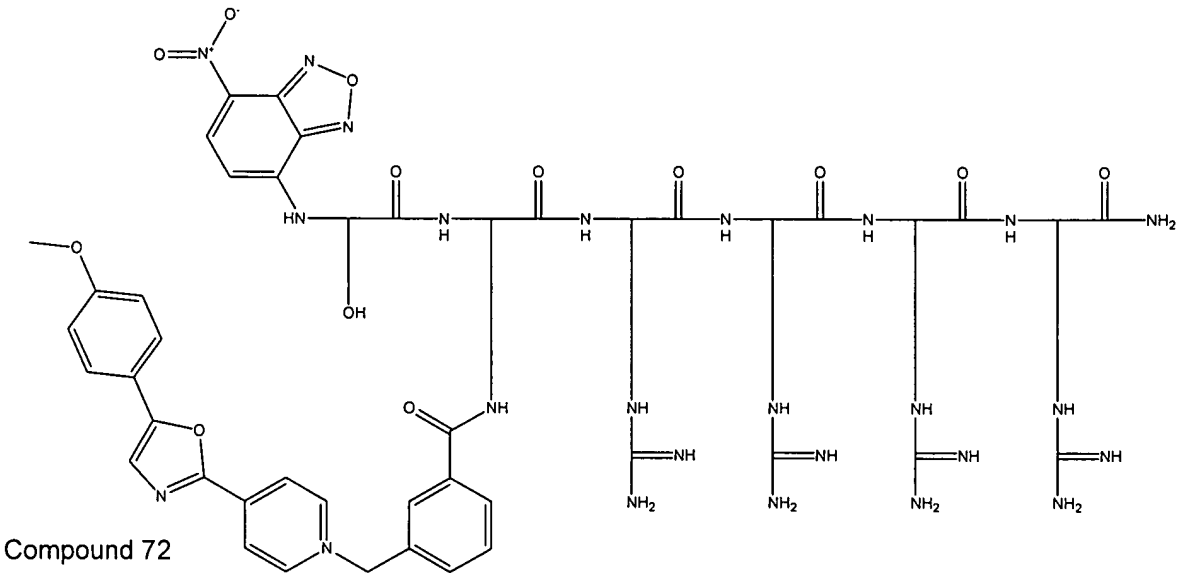
Compound 69



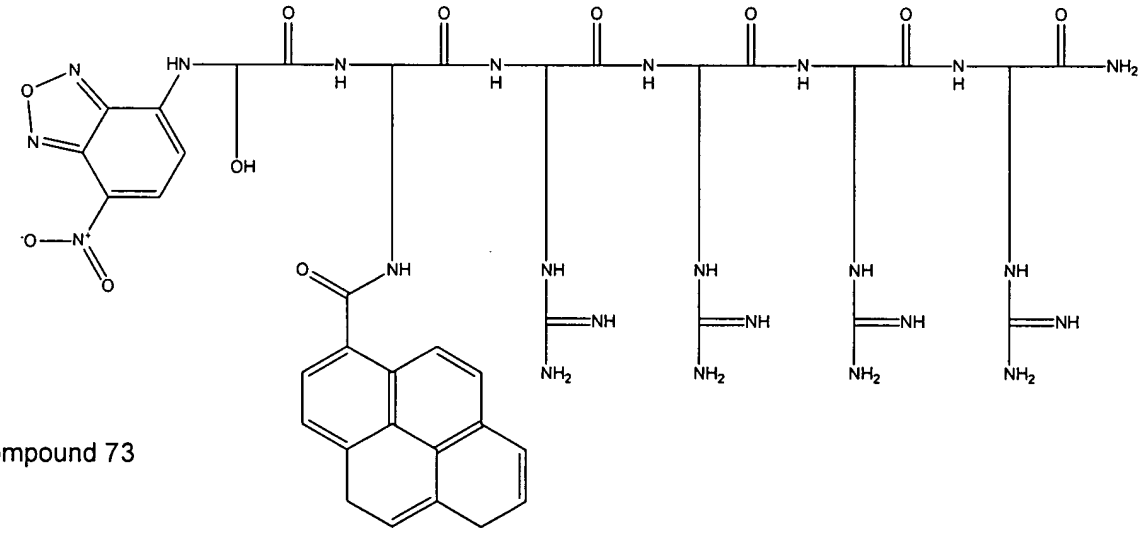
Compound 70



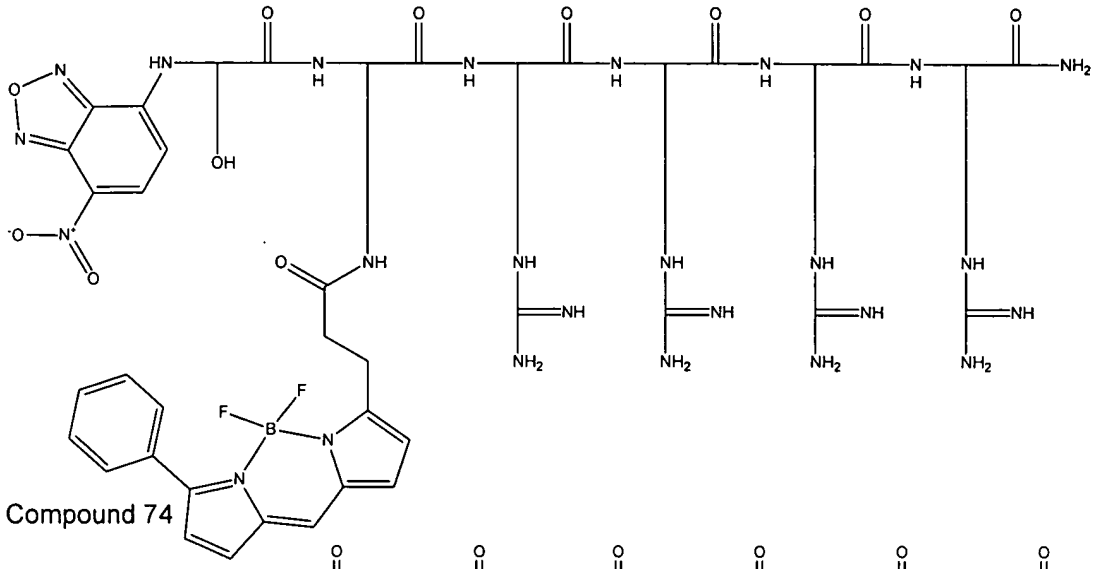
Compound 71



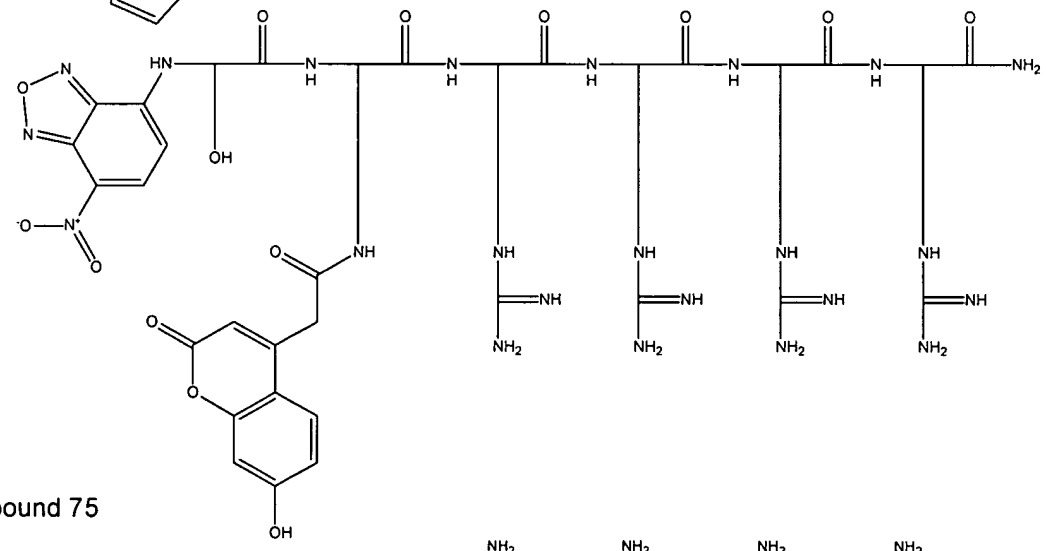
Compound 72



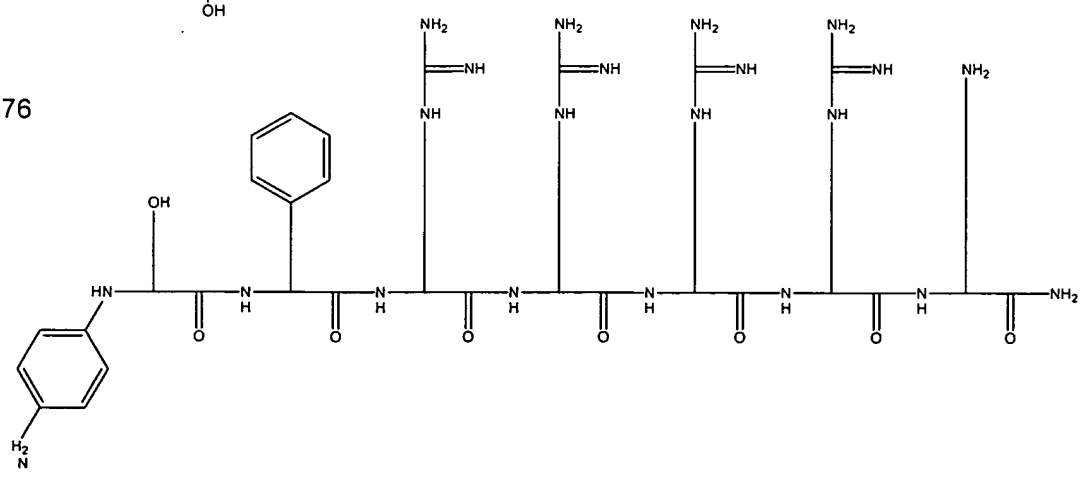
Compound 73



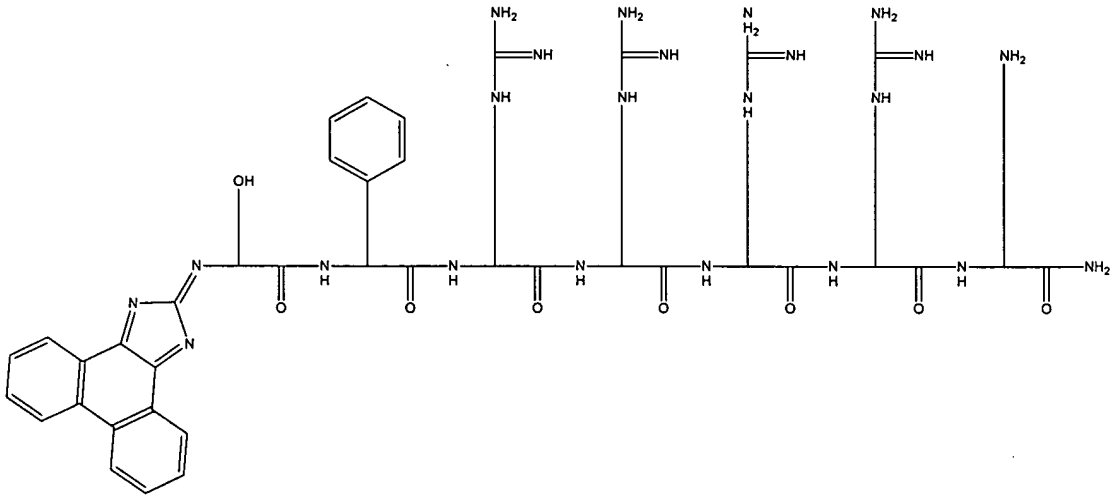
Compound 74



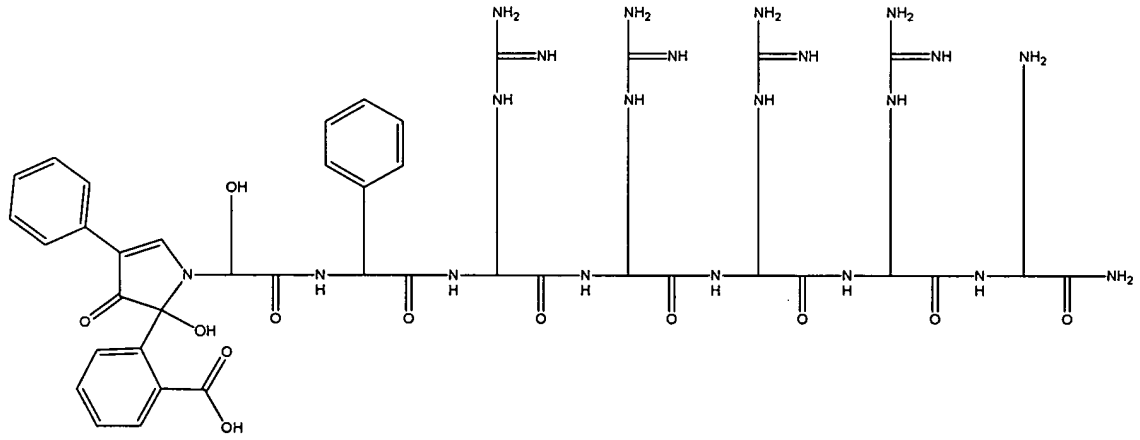
Compound 75



Compound 76

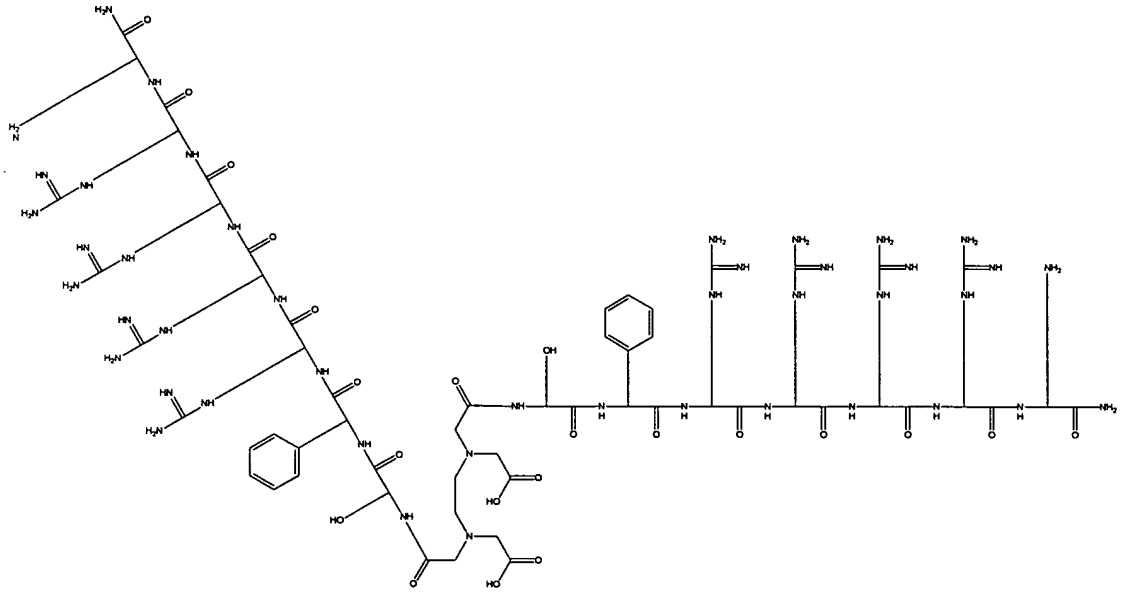


Compound 77

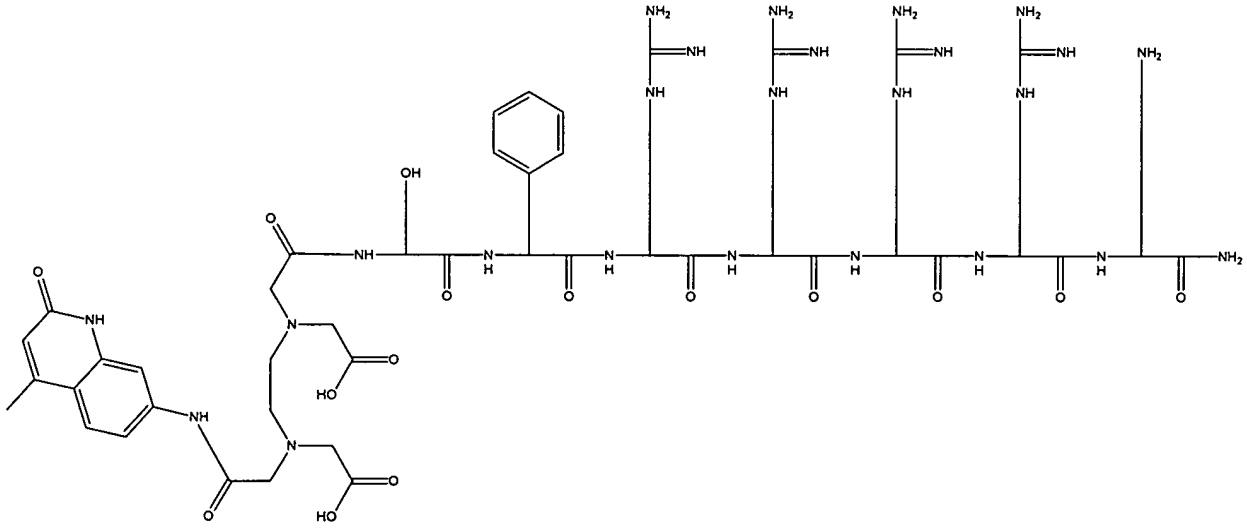


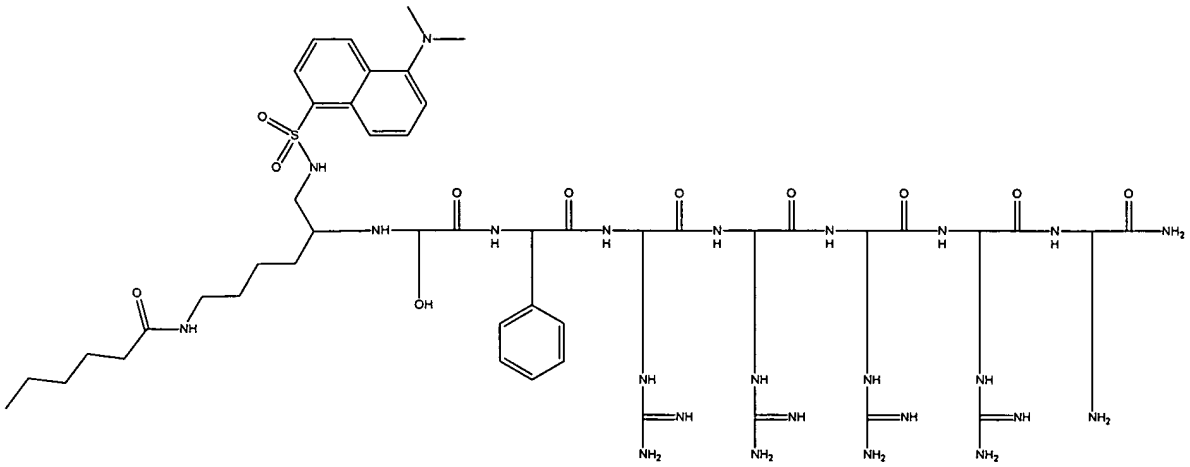
Compound 78

Compound 79



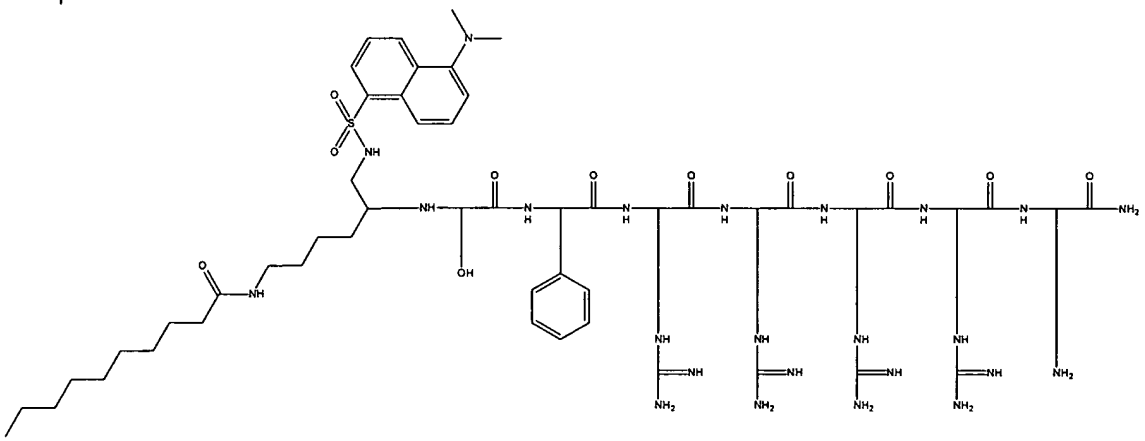
Compound 80

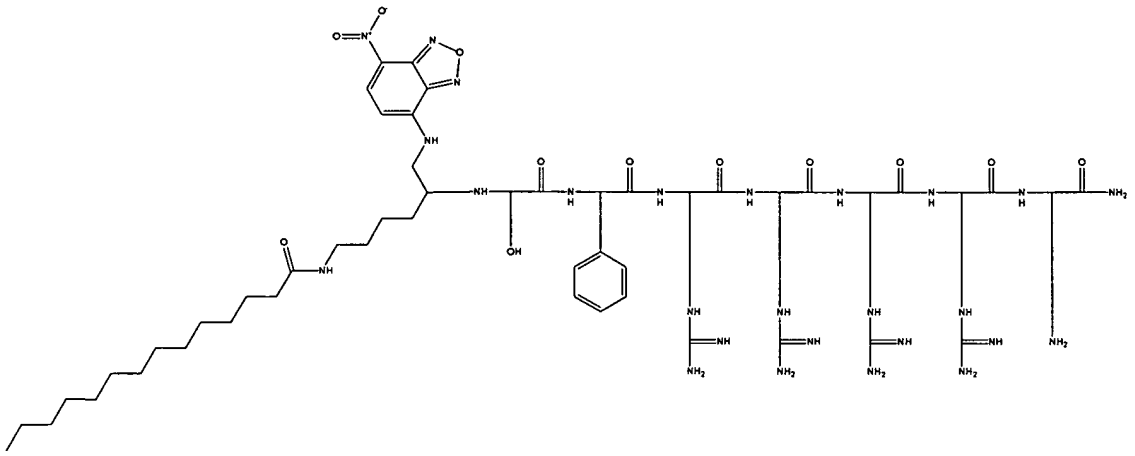




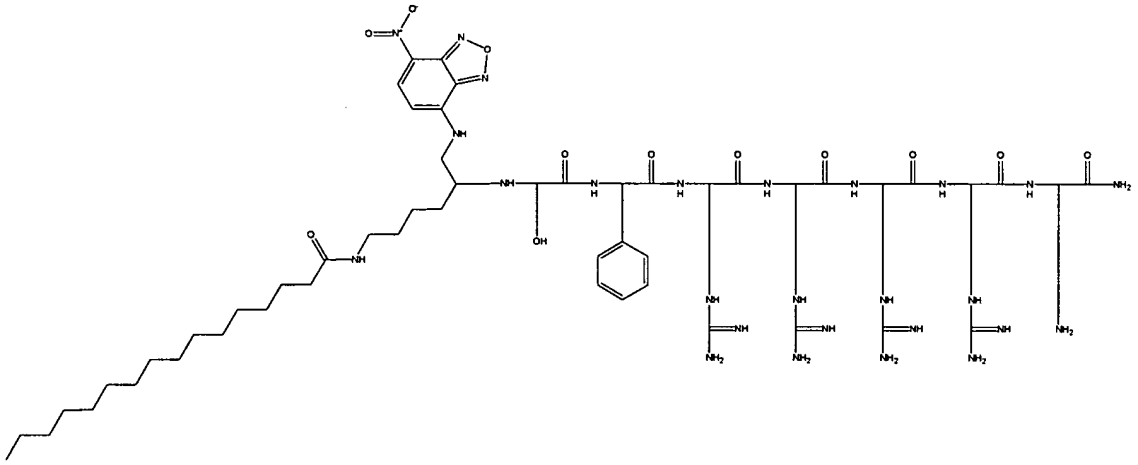
Compound 81

Compound 82

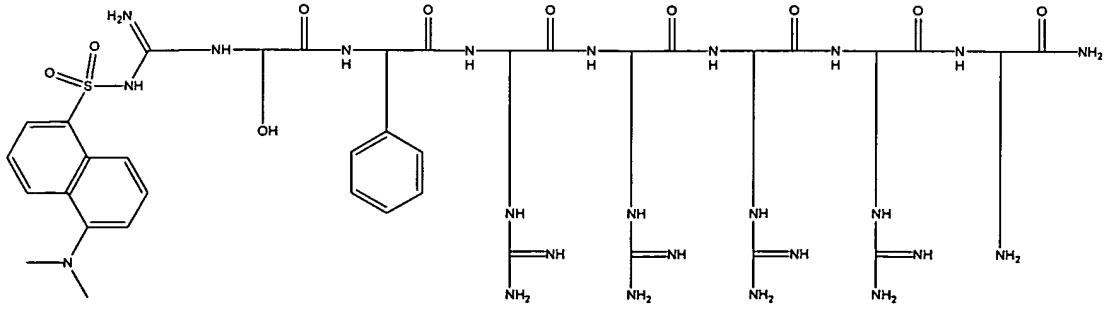




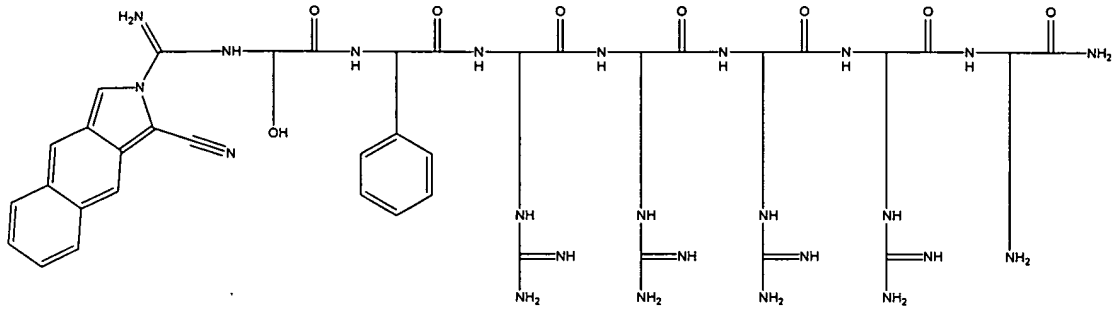
Compound 83



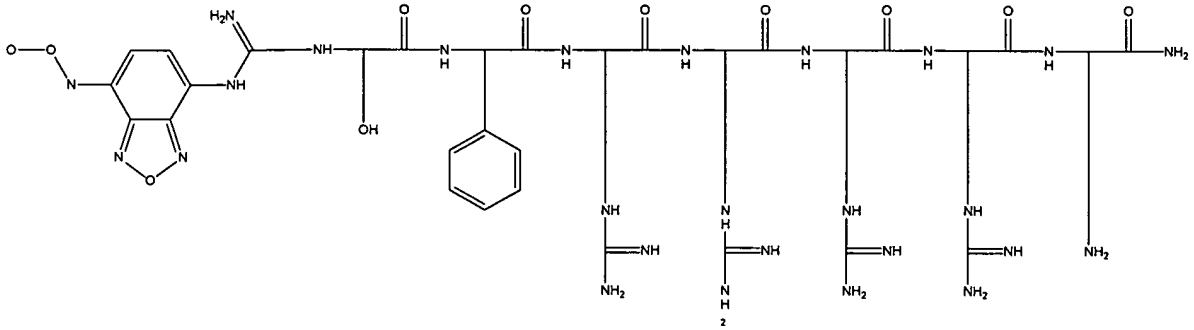
Compound 84



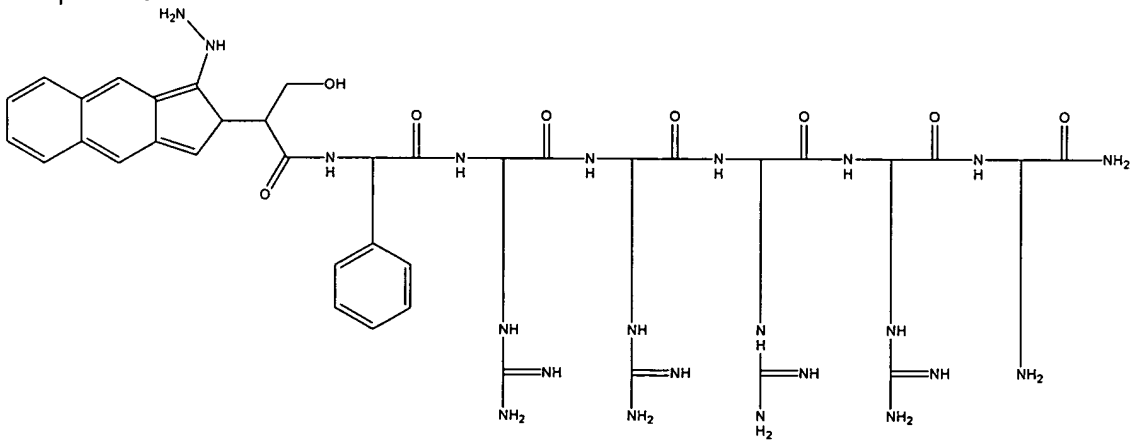
Compound 85



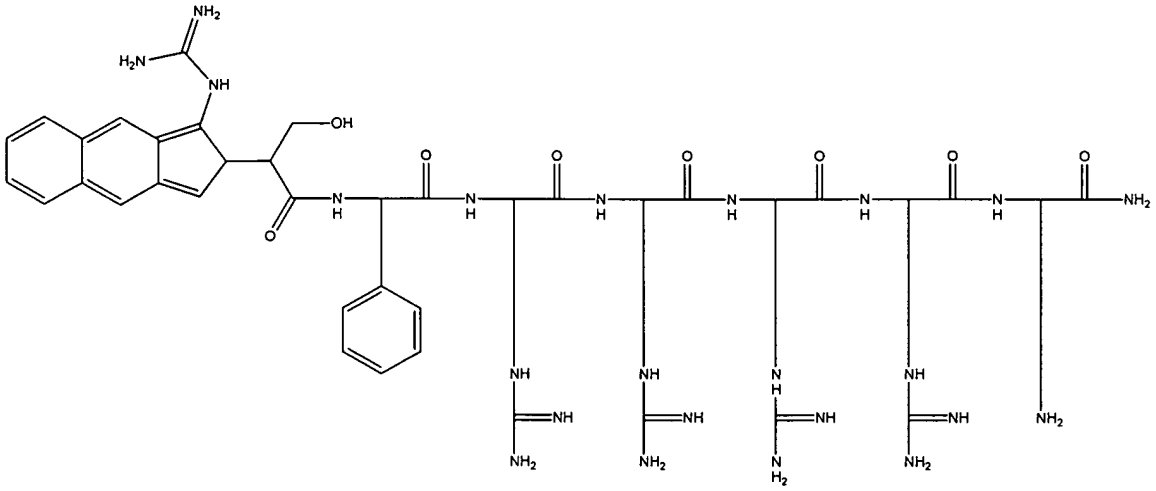
Compound 86



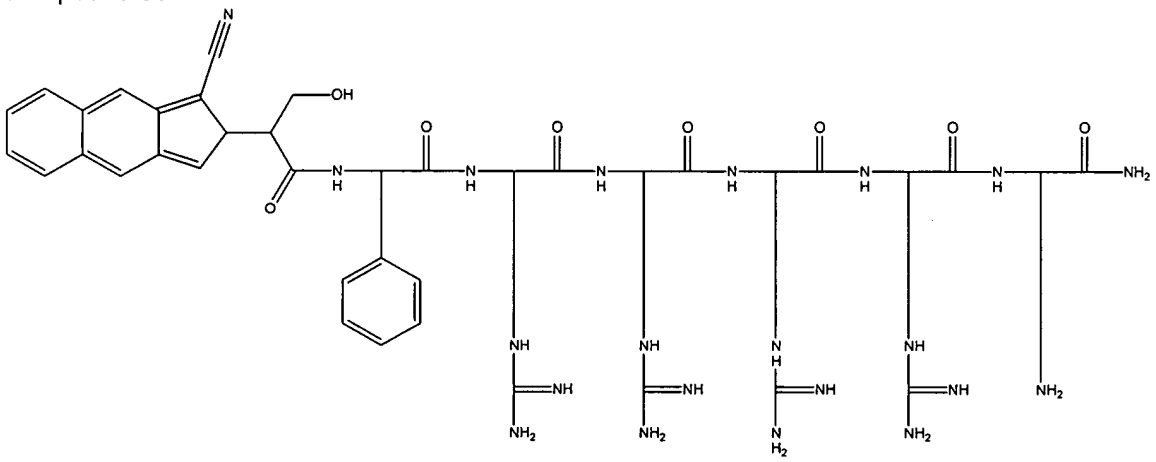
Compound 87



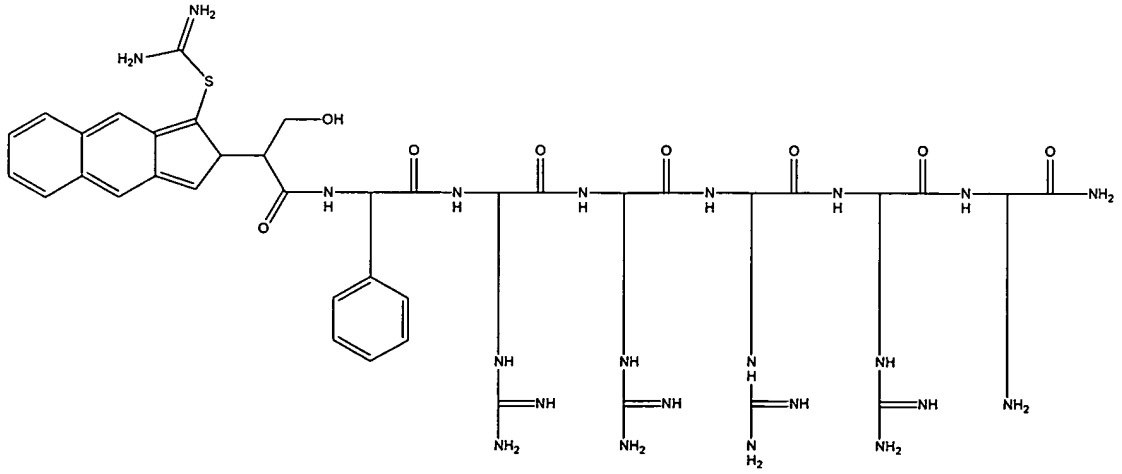
Compound 88



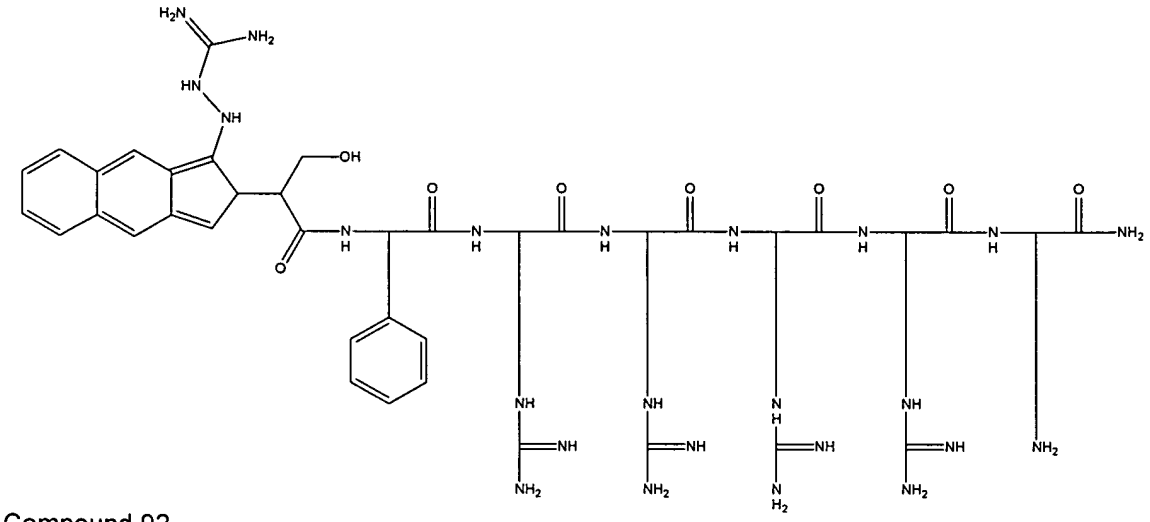
Compound 89



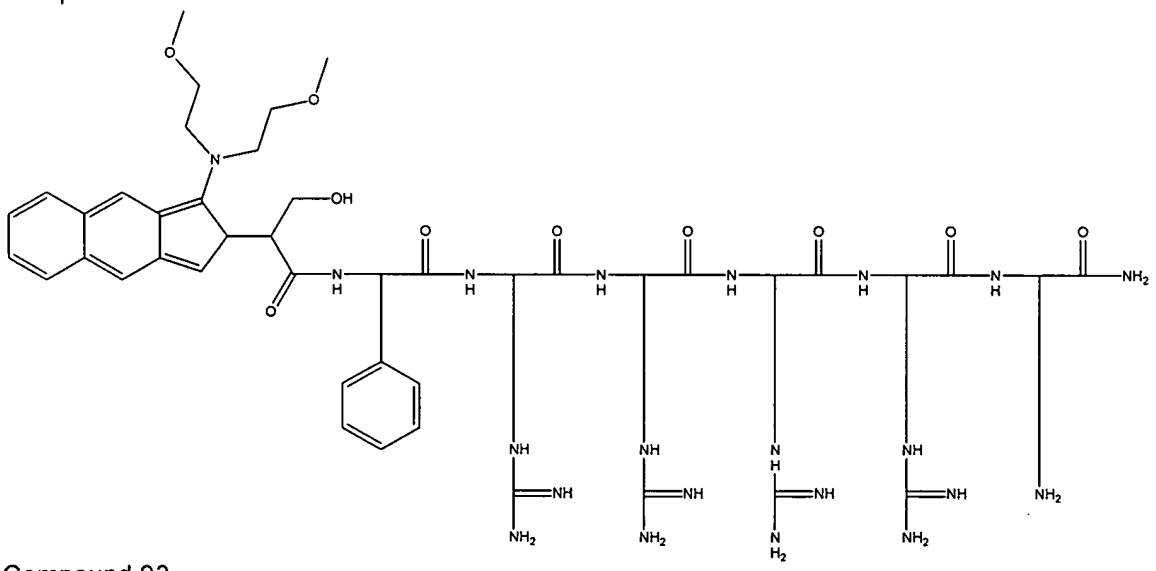
Compound 90



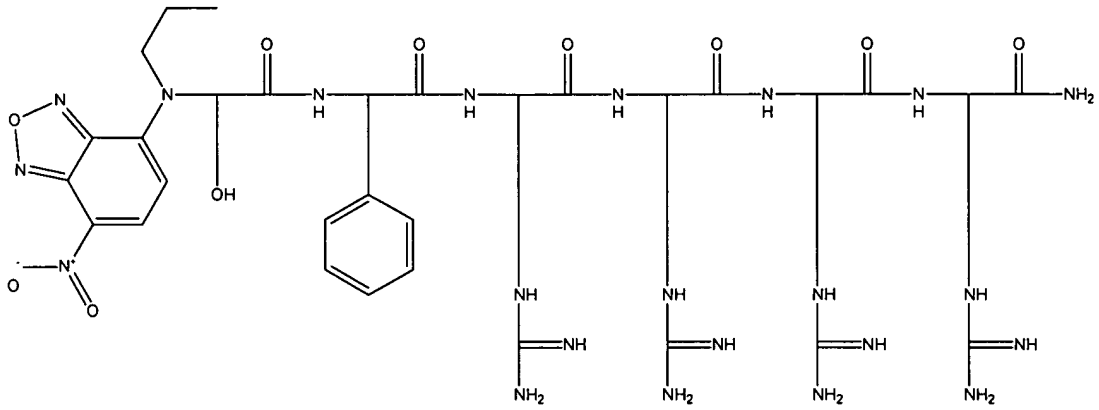
Compound 91



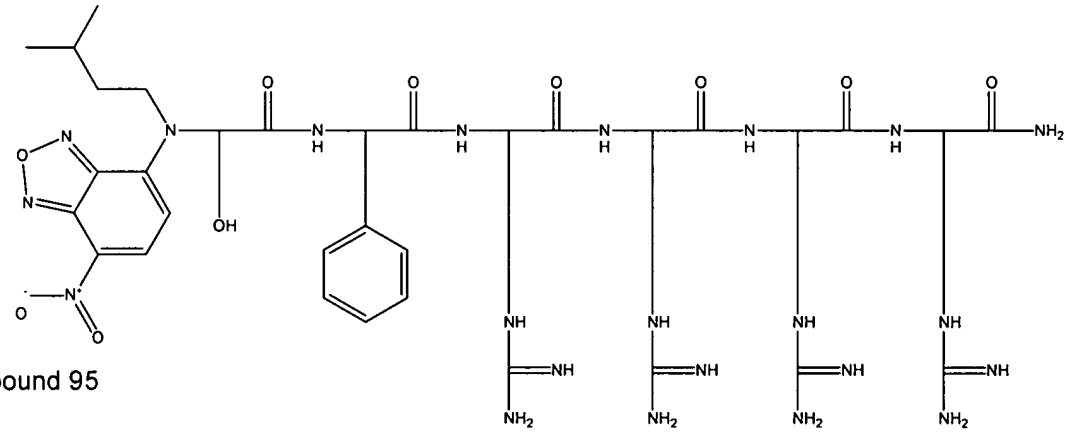
Compound 92



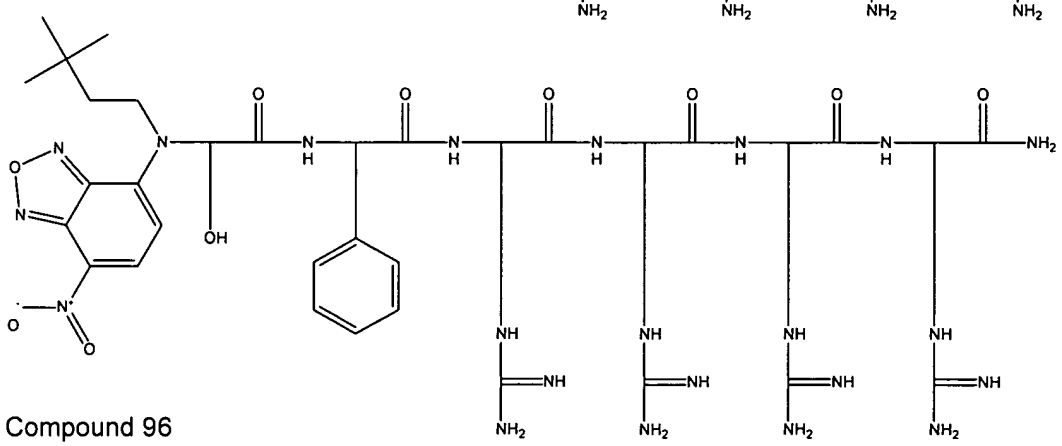
Compound 93



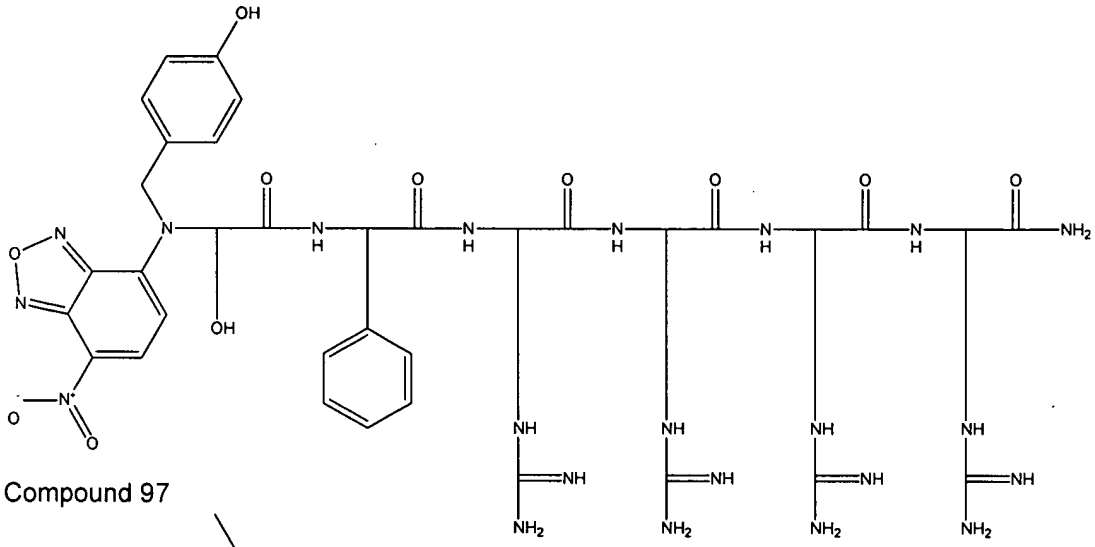
Compound 94



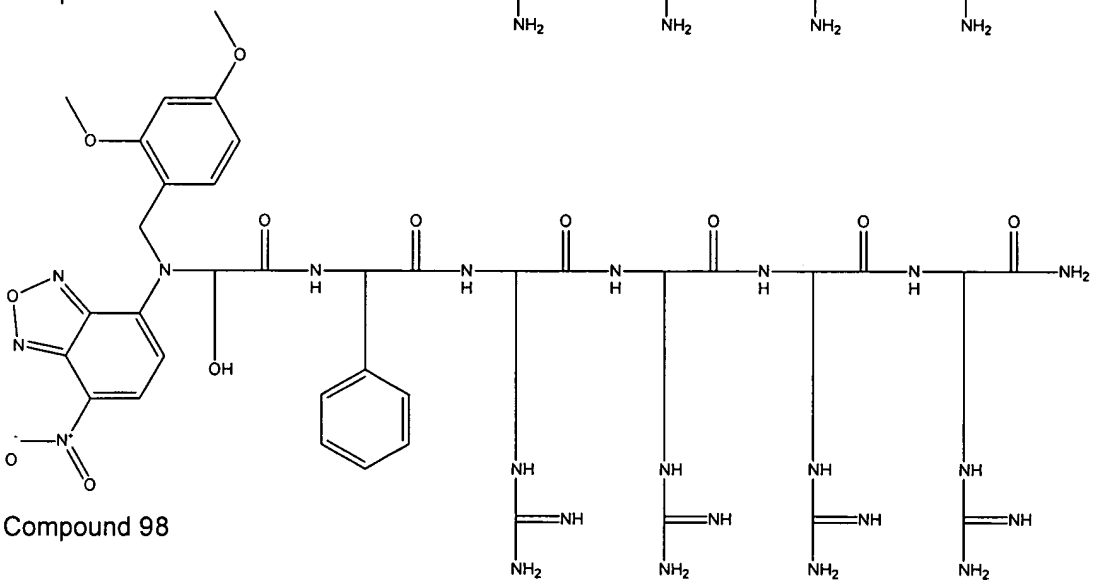
Compound 95



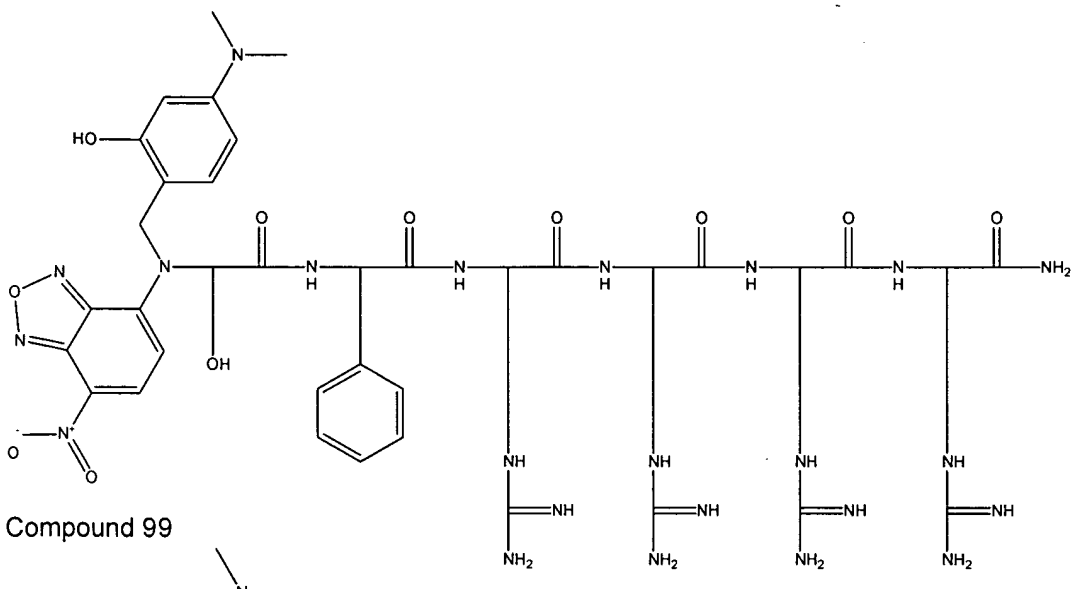
Compound 96



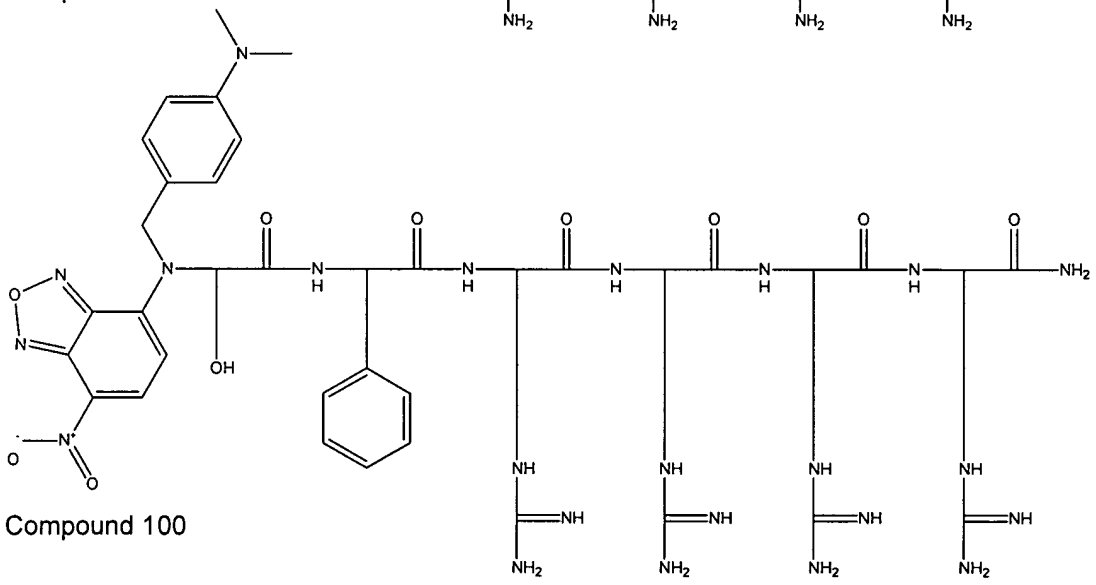
Compound 97



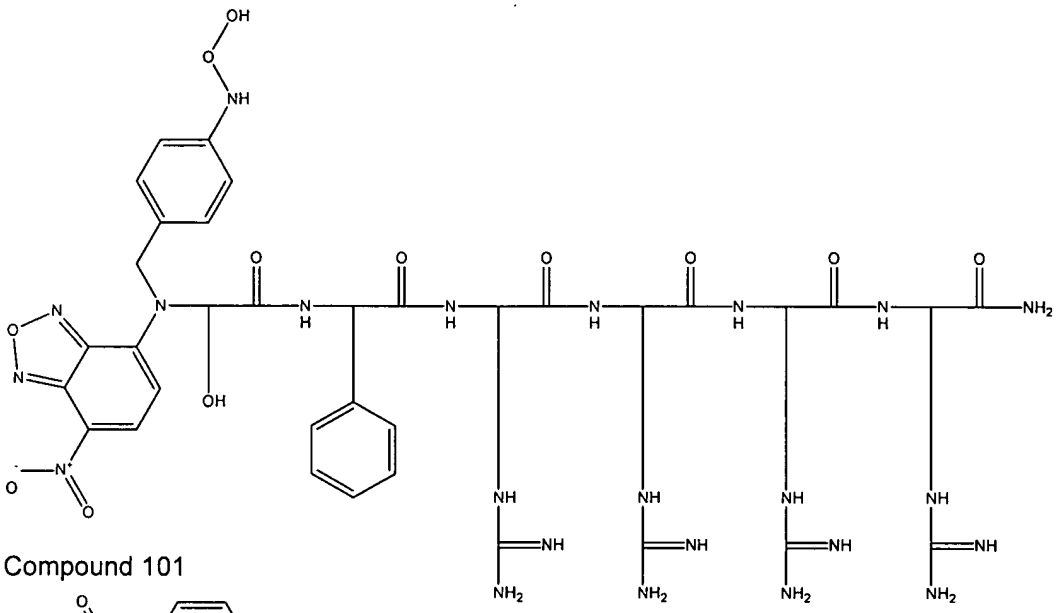
Compound 98



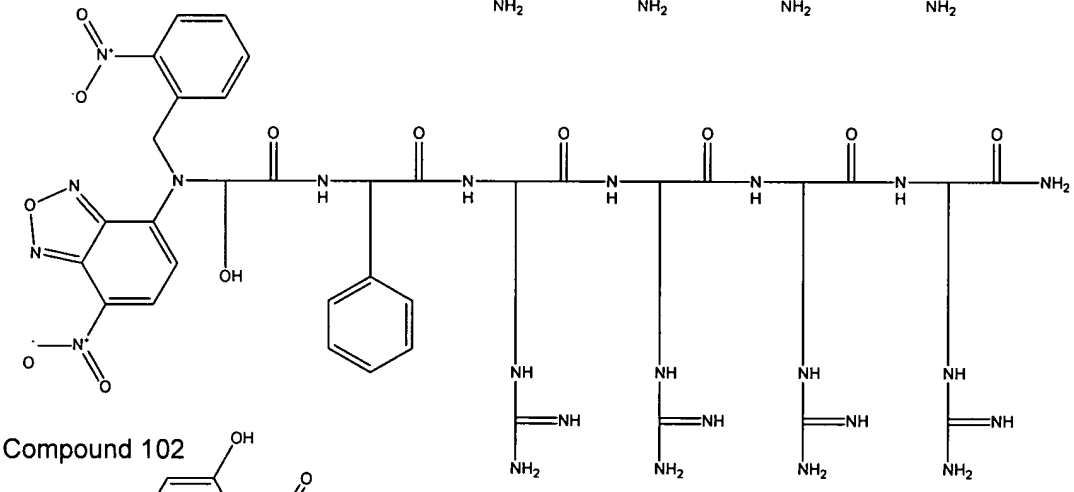
Compound 99



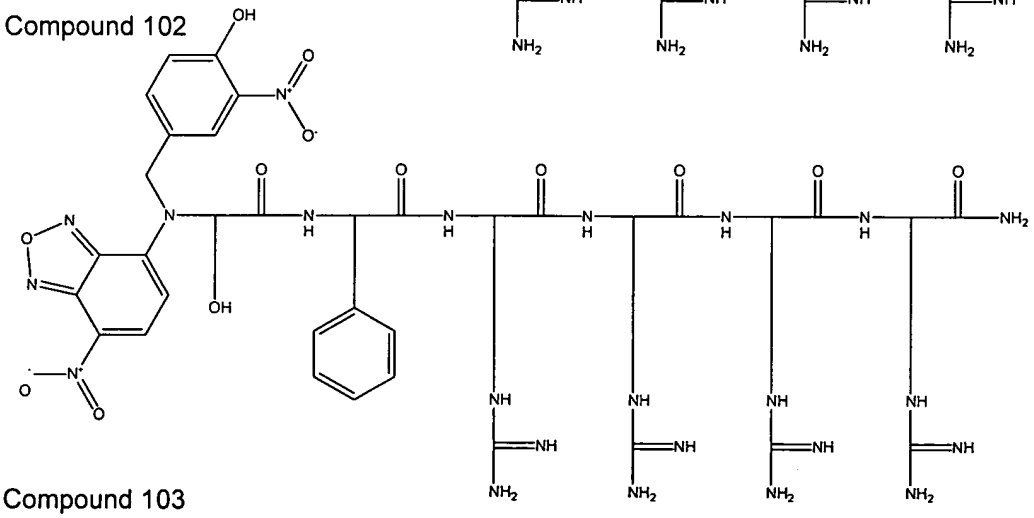
Compound 100



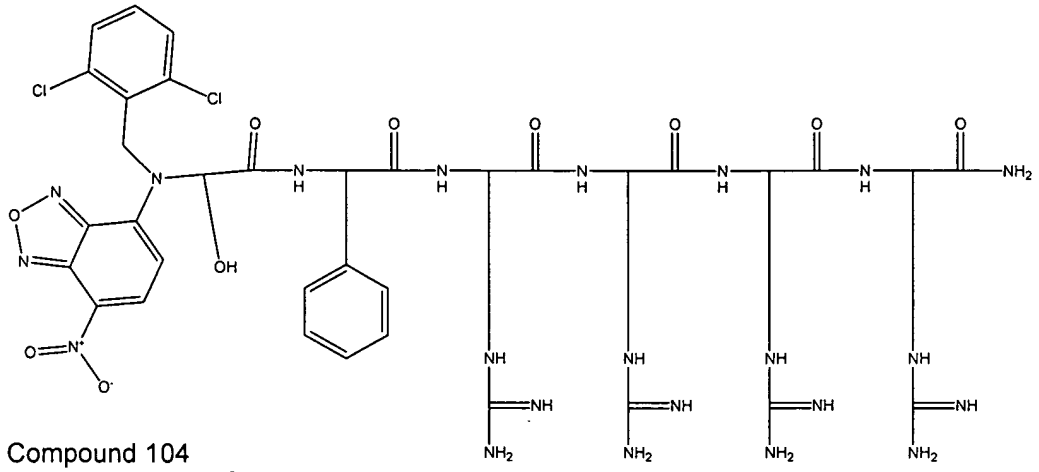
Compound 101



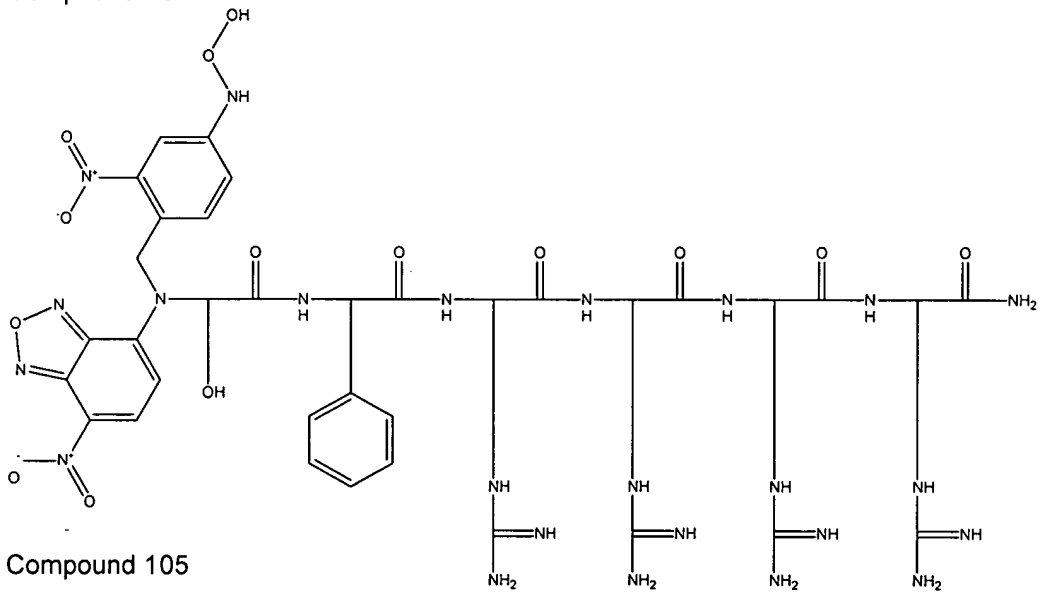
Compound 102



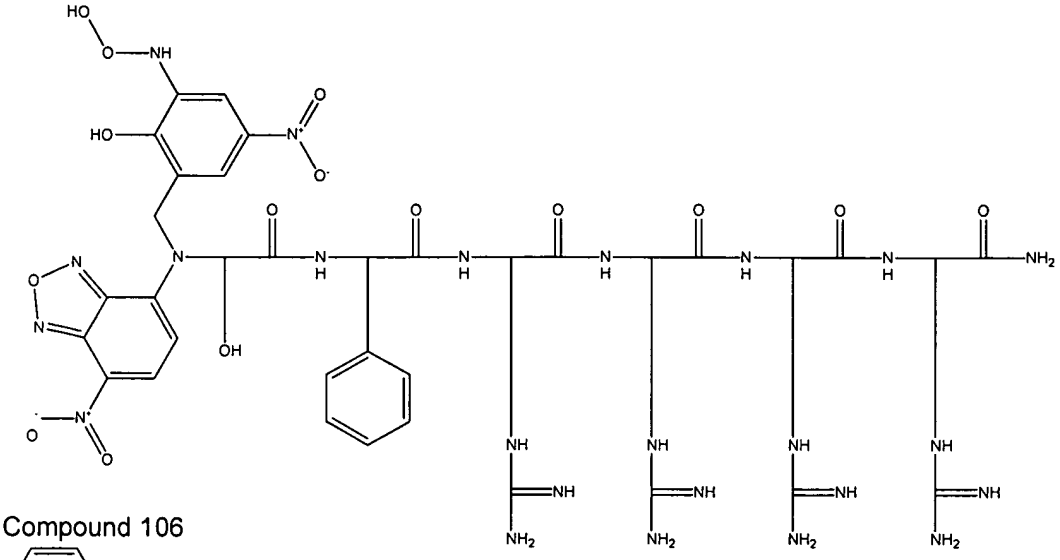
Compound 103



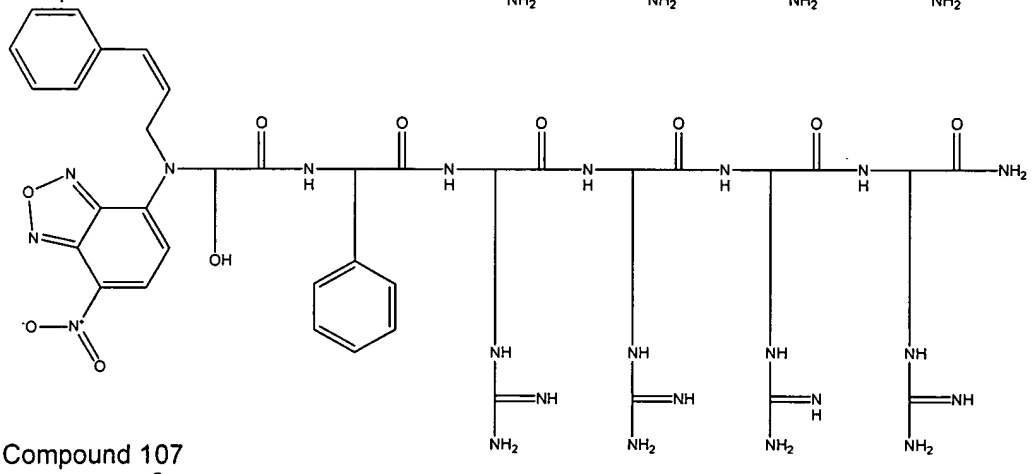
Compound 104



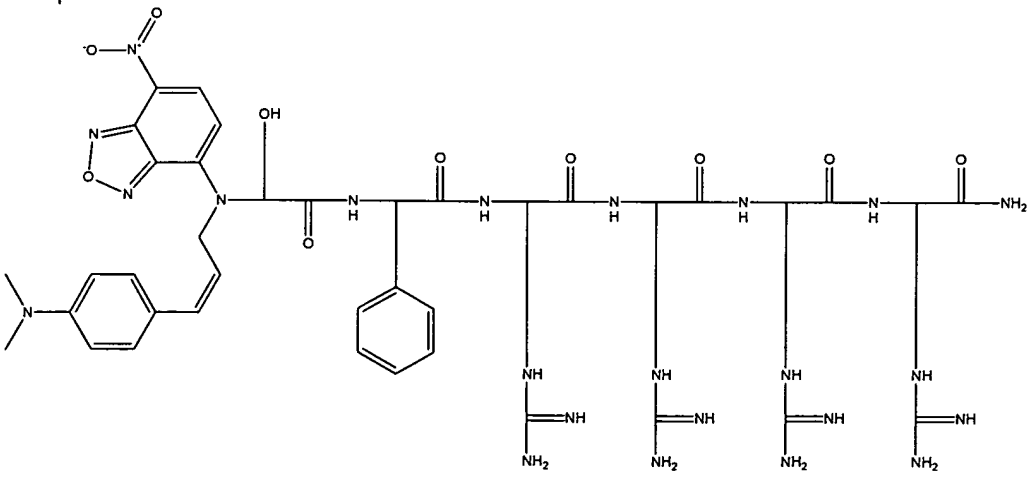
Compound 105



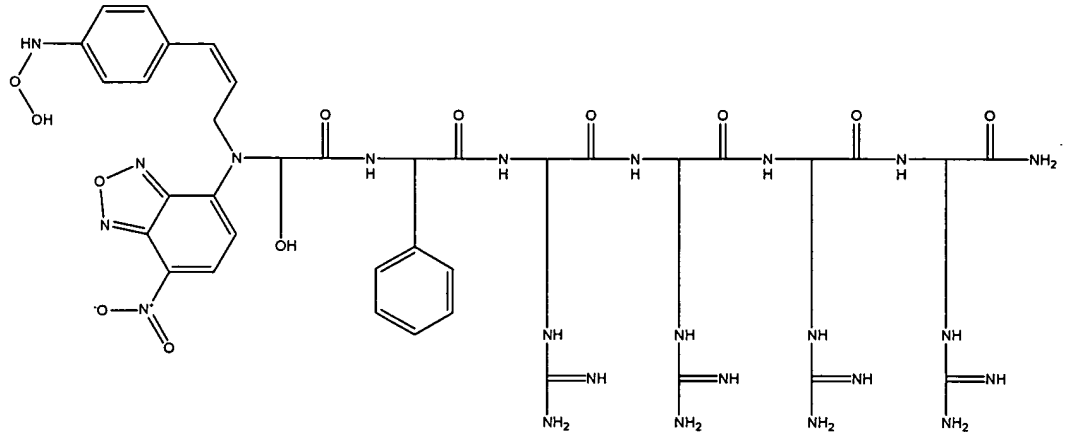
Compound 106



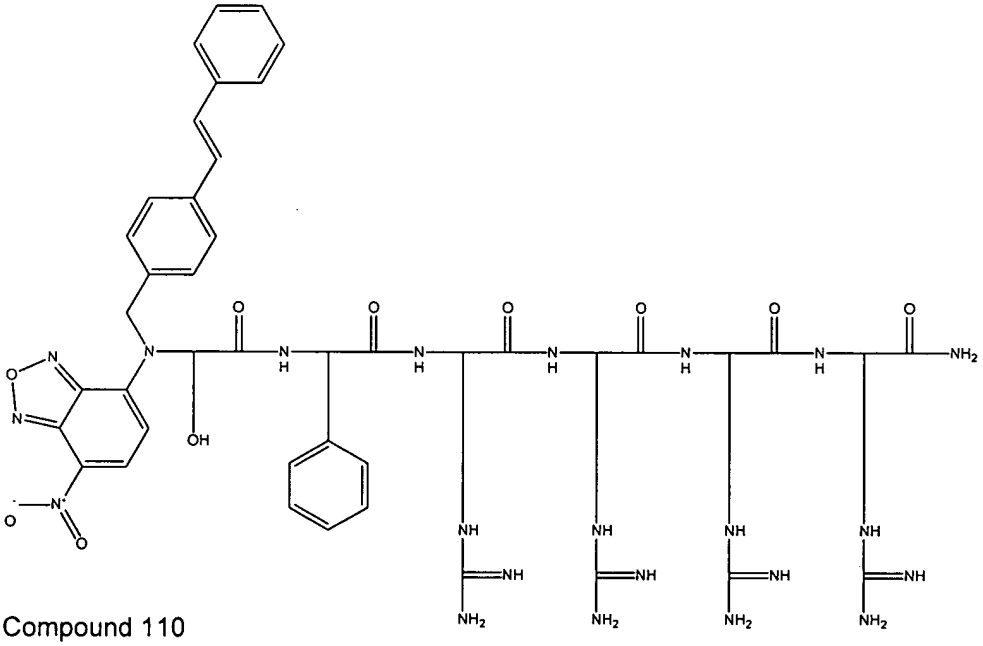
Compound 107



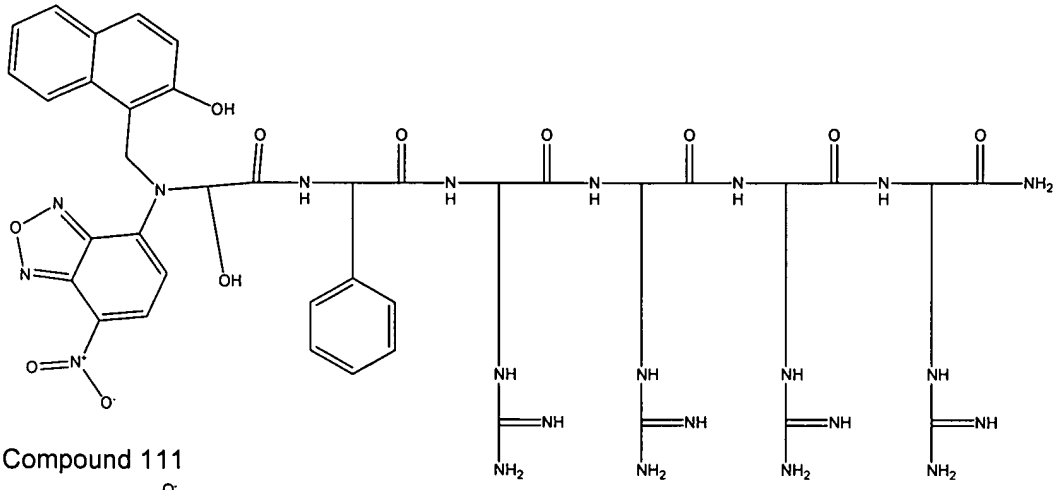
Compound 108



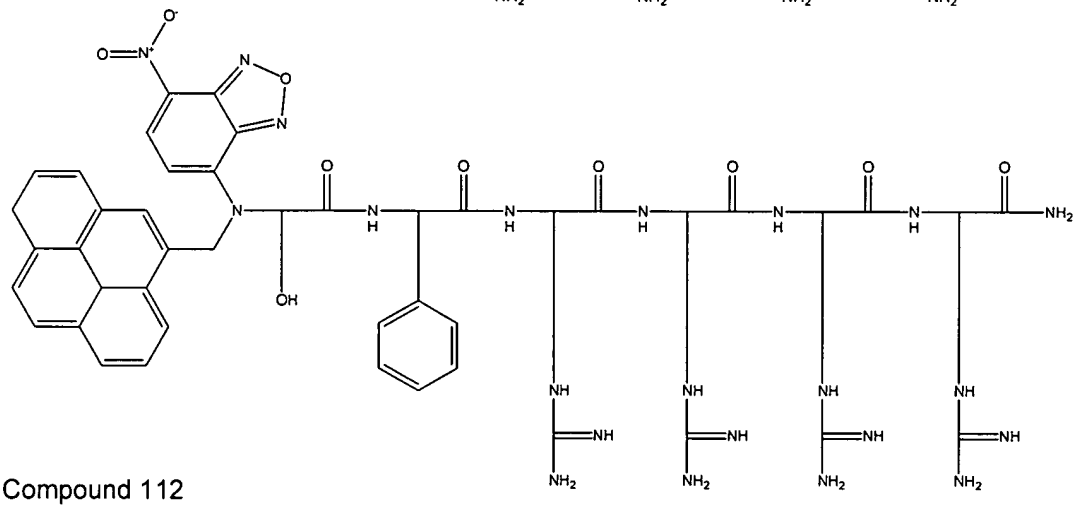
Compound 109



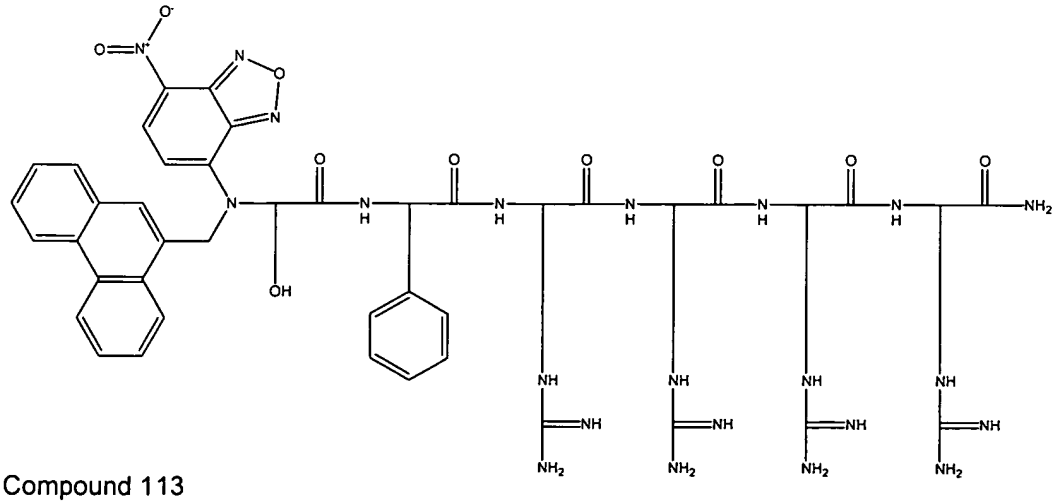
Compound 110



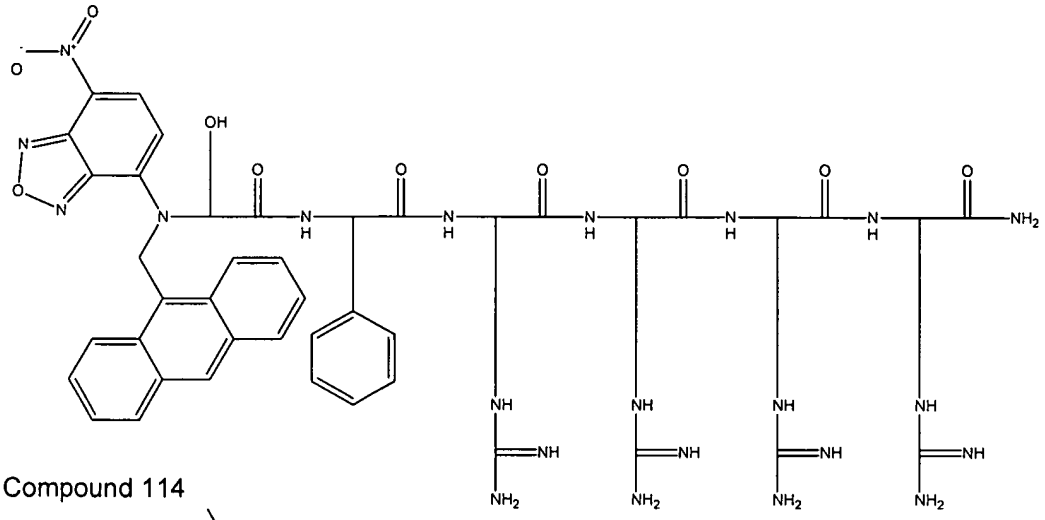
Compound 111



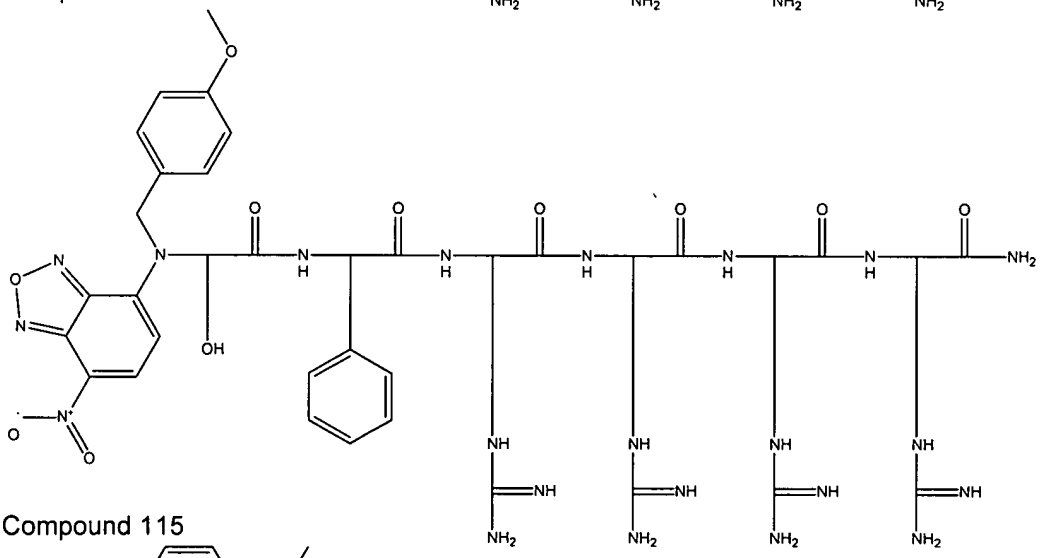
Compound 112



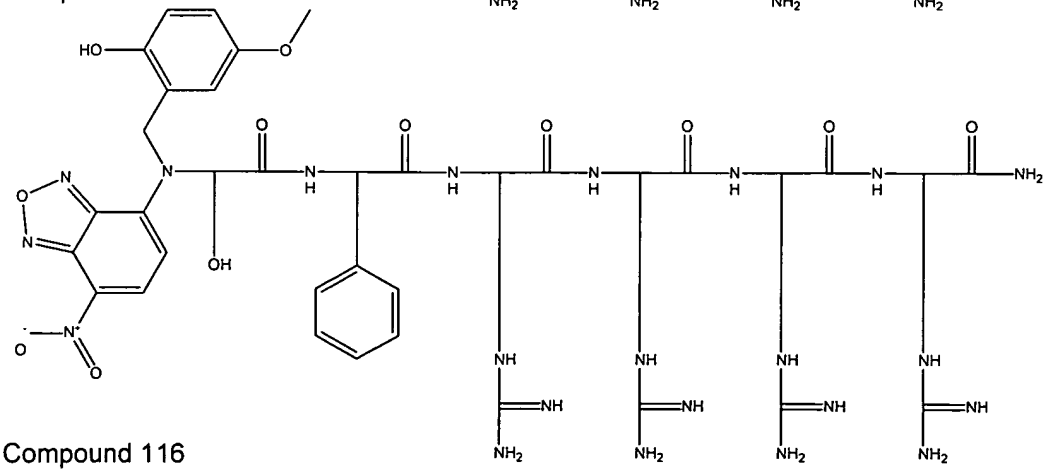
Compound 113



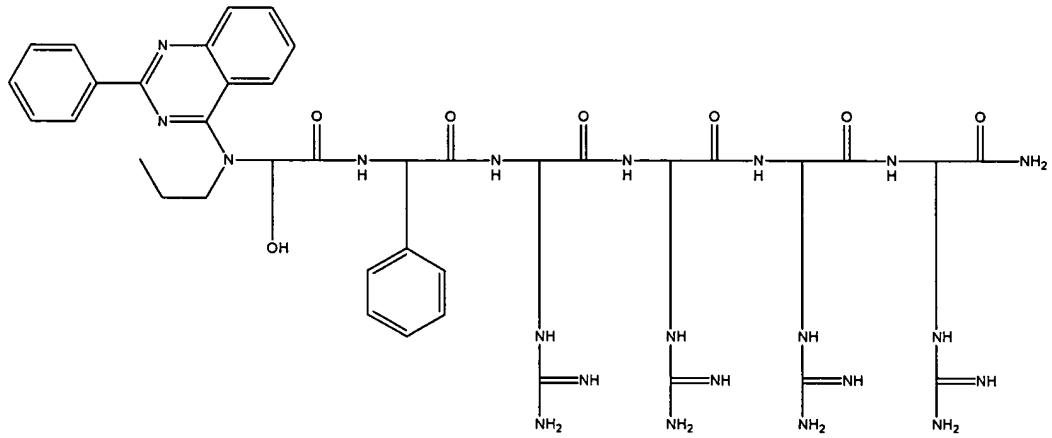
Compound 114



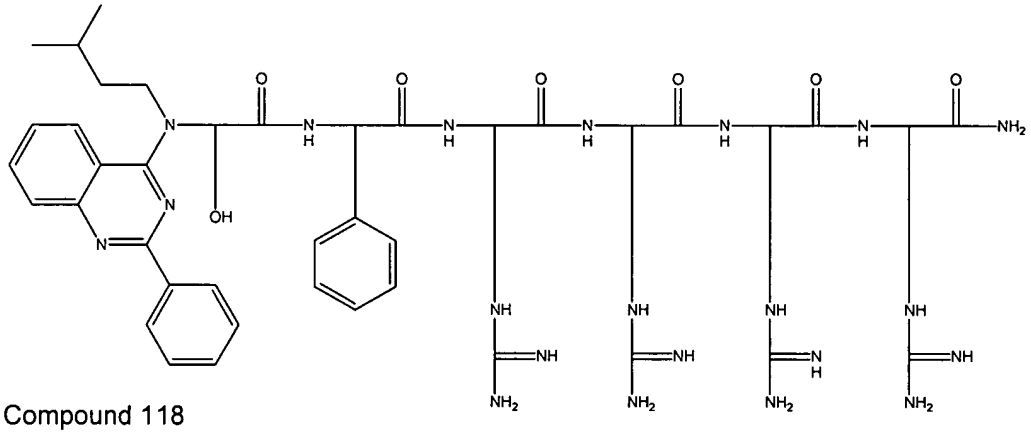
Compound 115



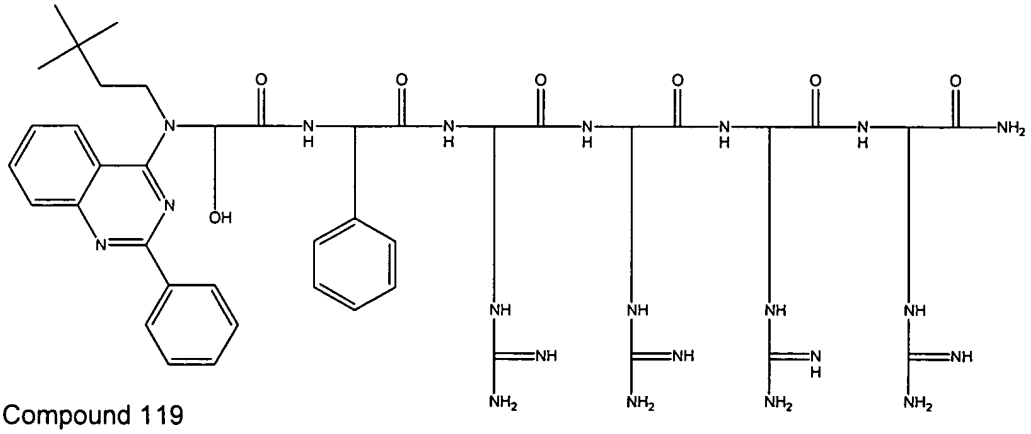
Compound 116



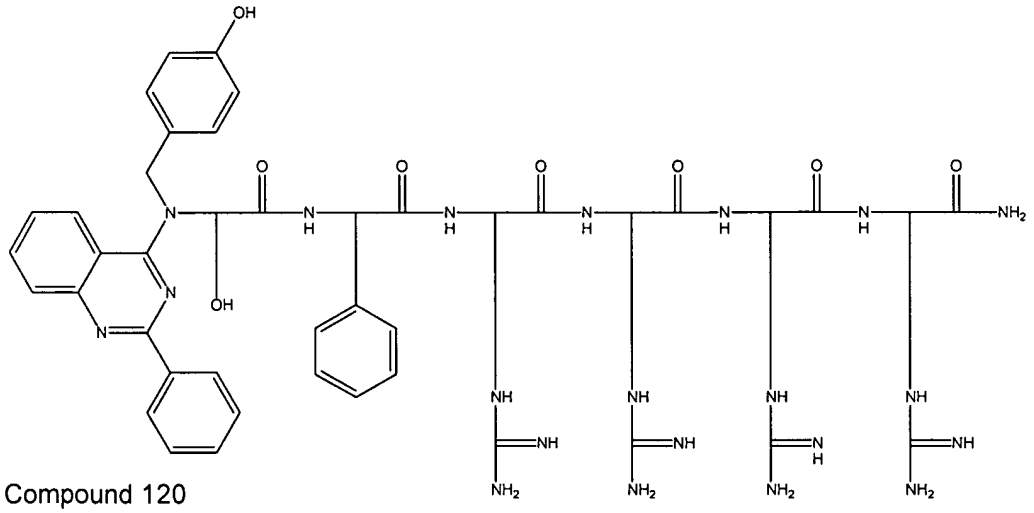
Compound 117



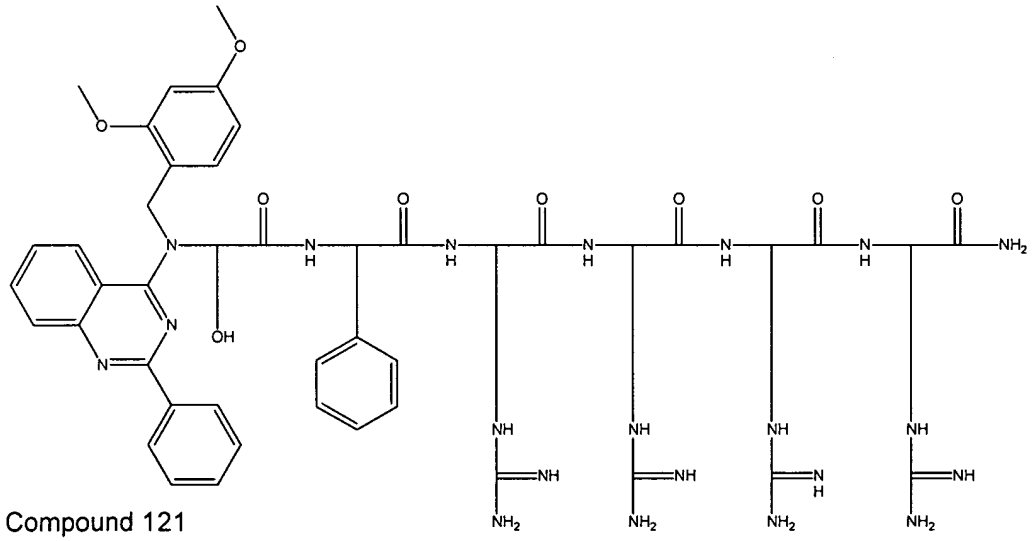
Compound 118



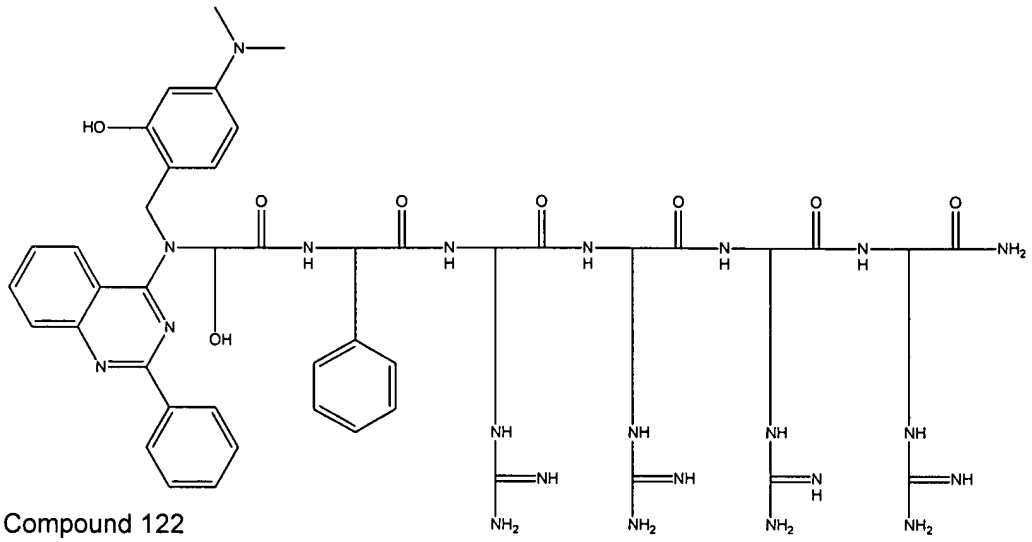
Compound 119



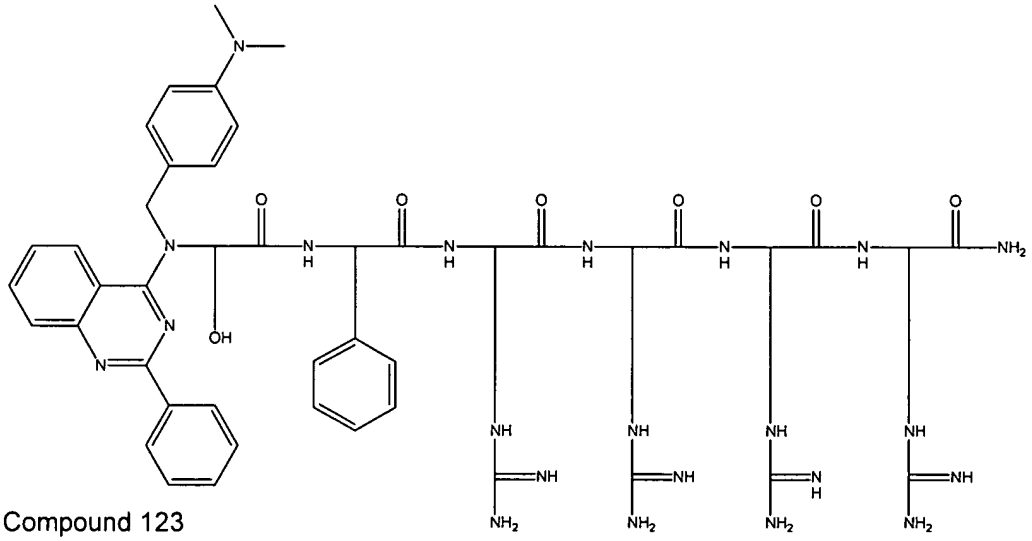
Compound 120



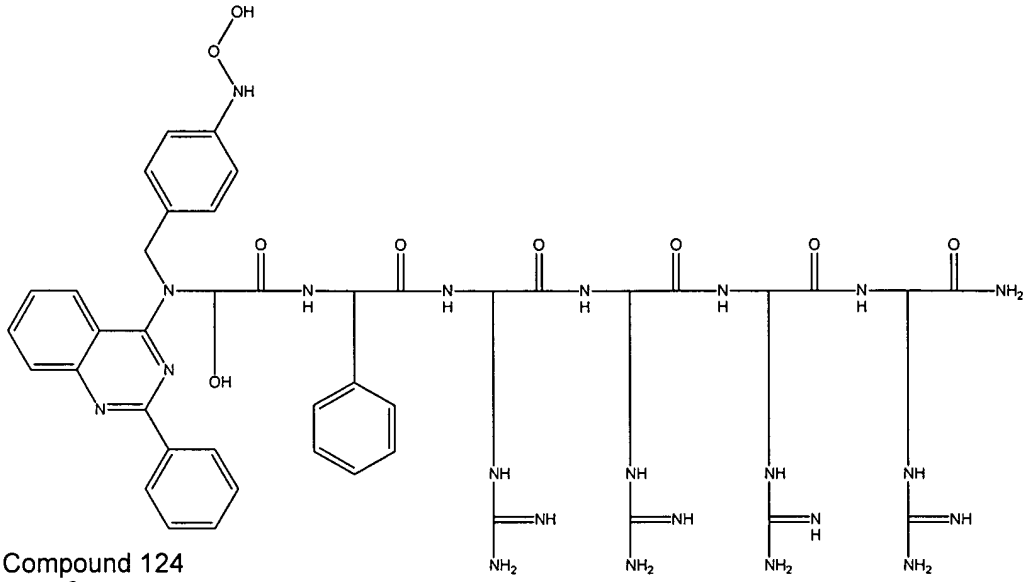
Compound 121



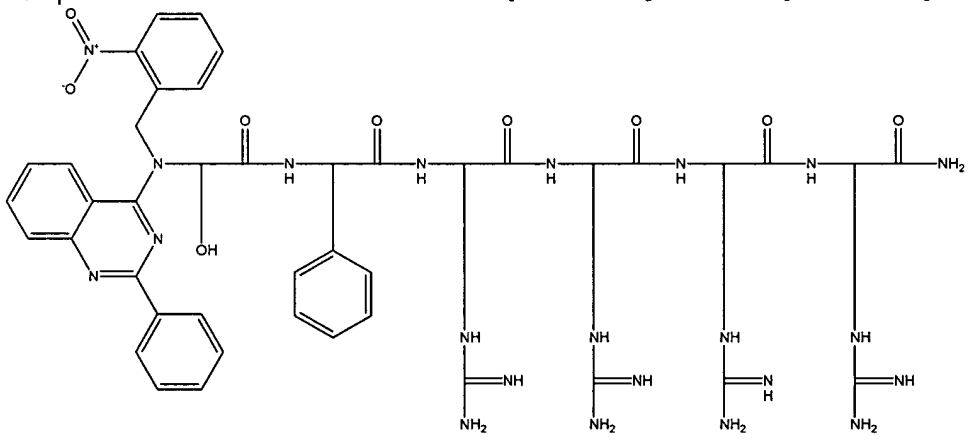
Compound 122



Compound 123

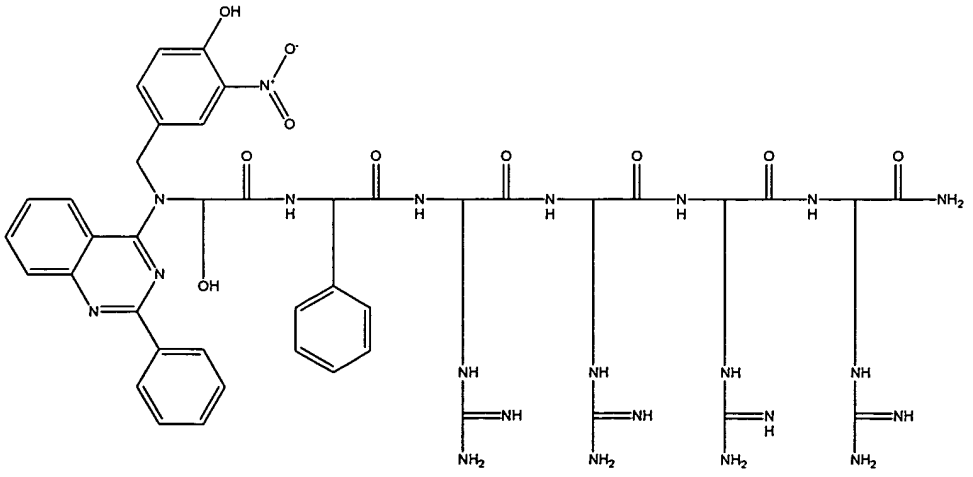


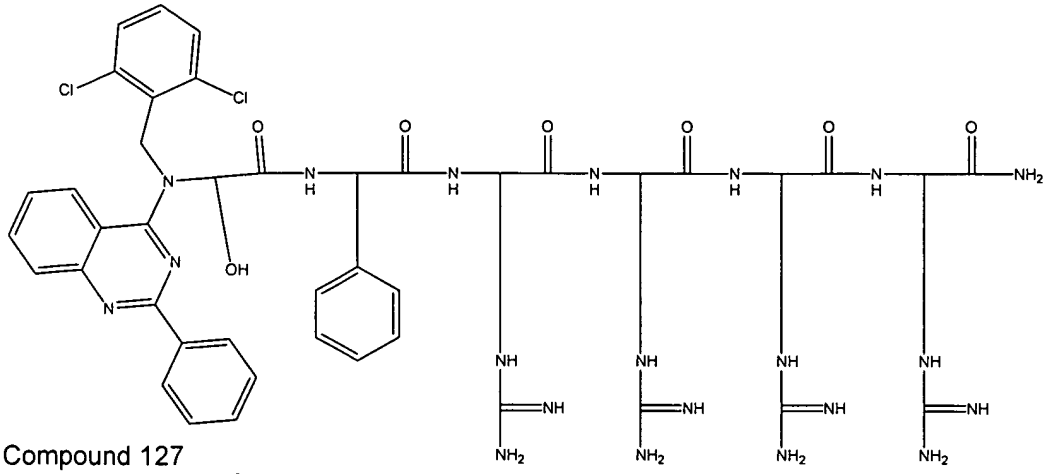
Compound 124



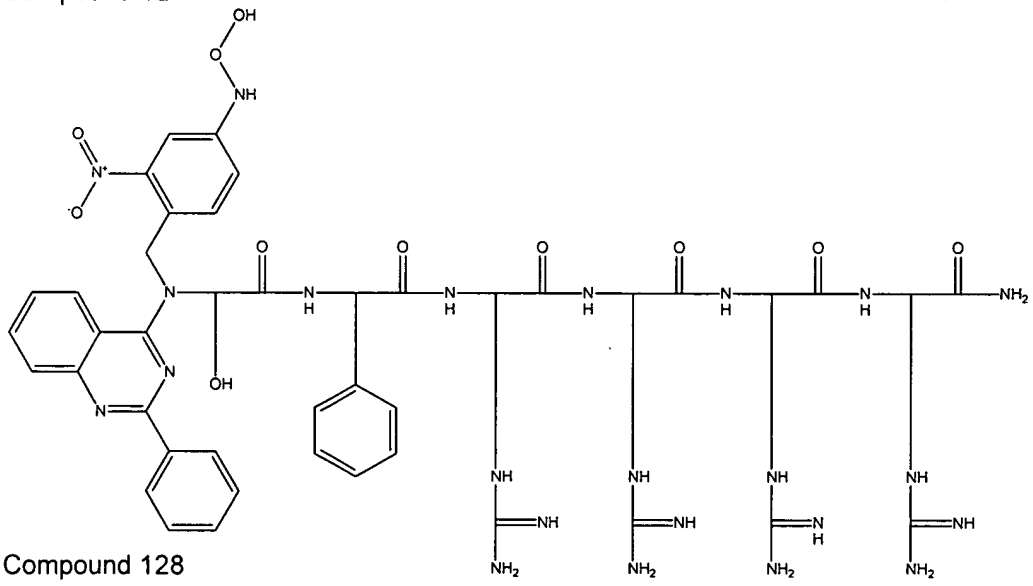
Compound 125

Compound 126

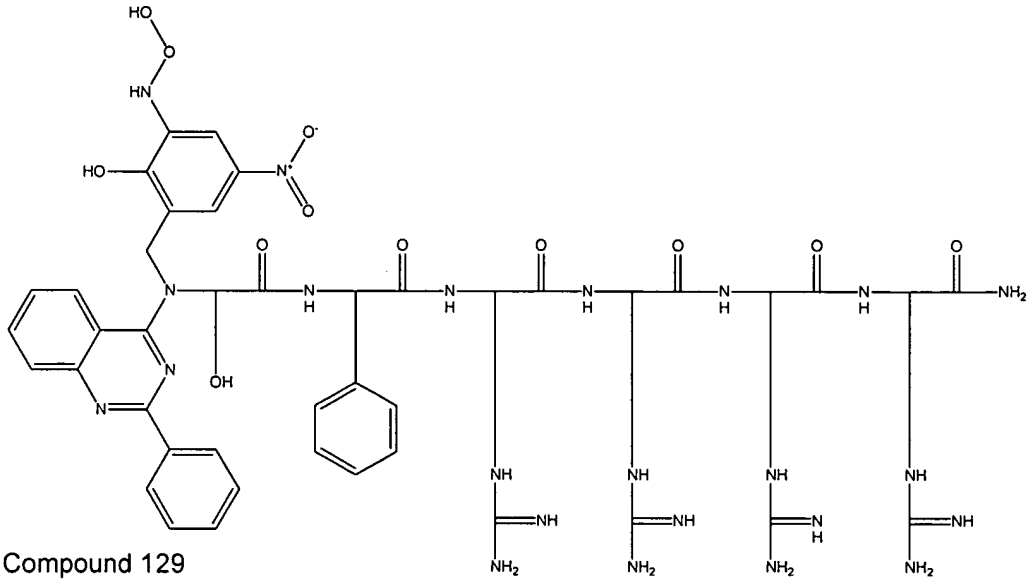




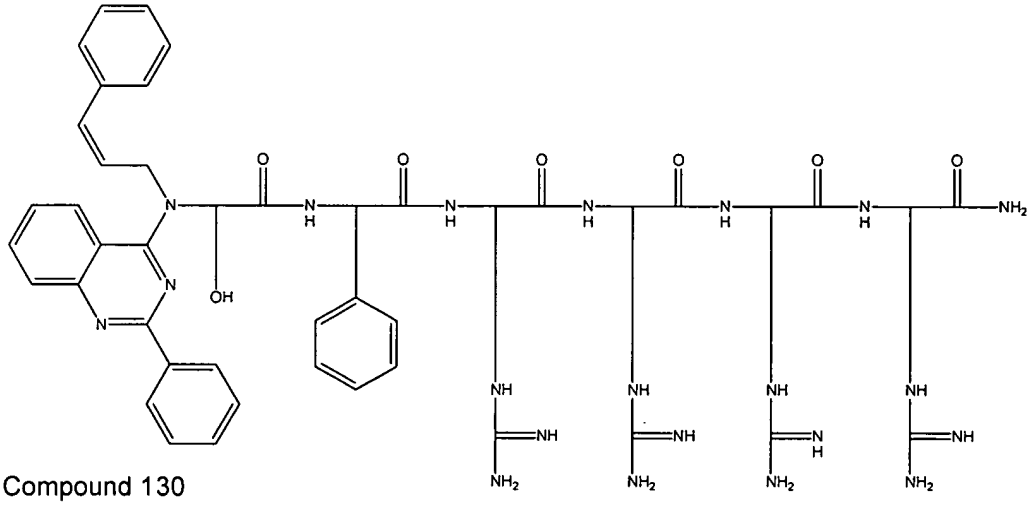
Compound 127



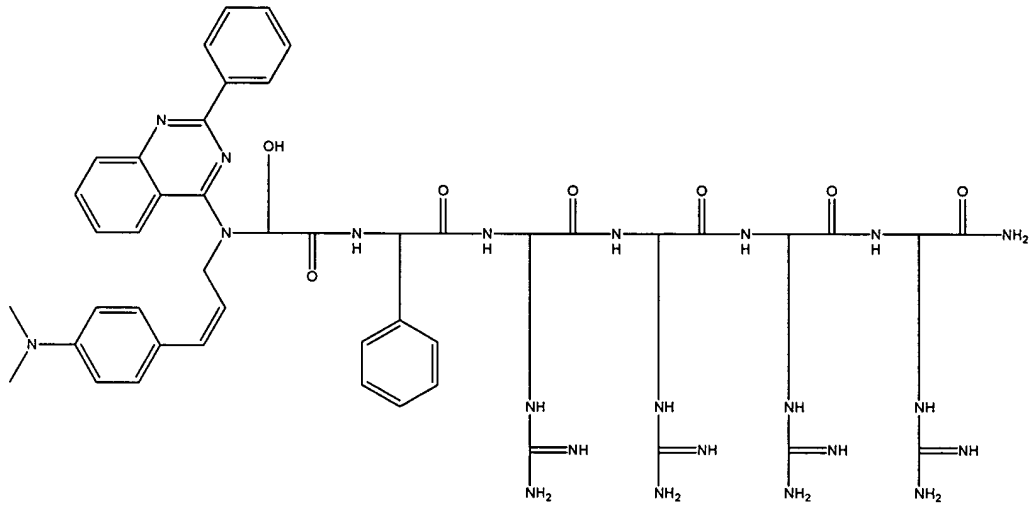
Compound 128



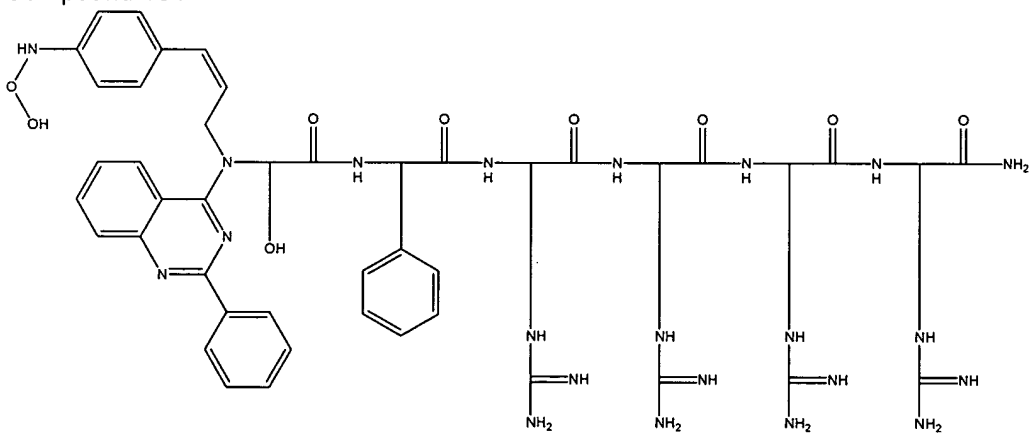
Compound 129



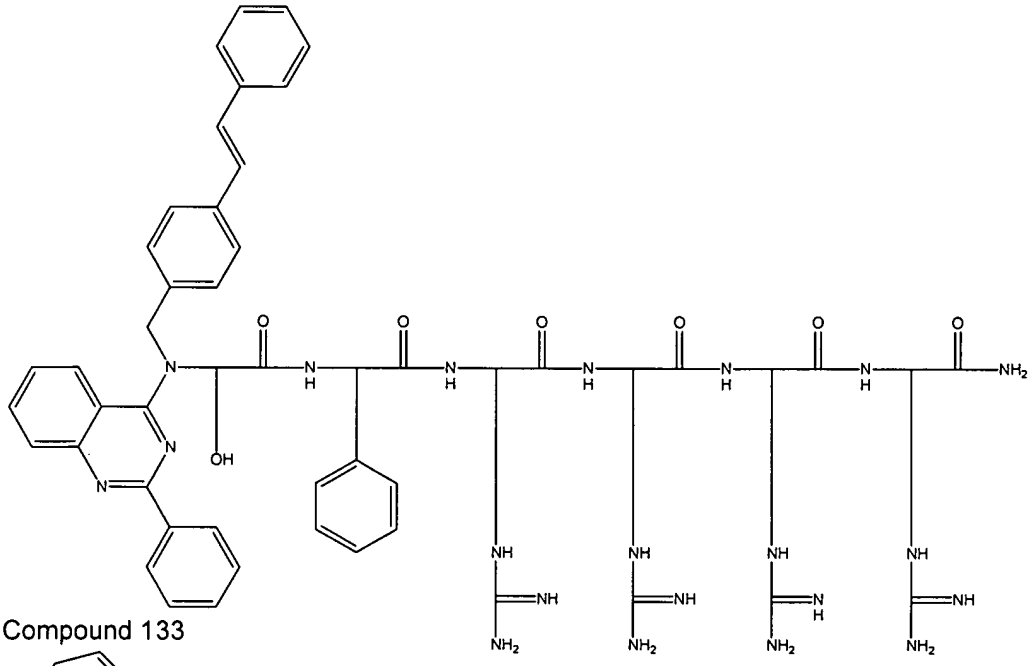
Compound 130



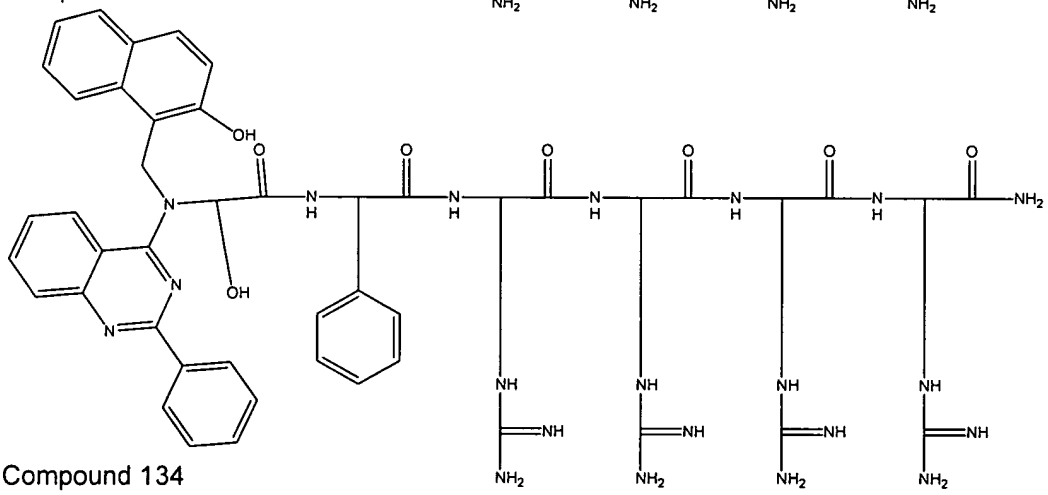
Compound 131



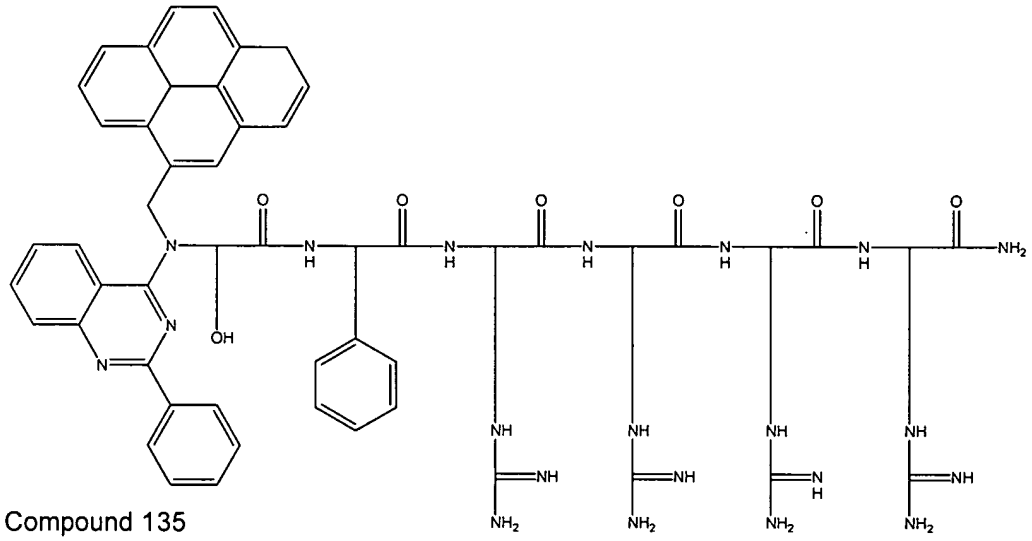
Compound 132



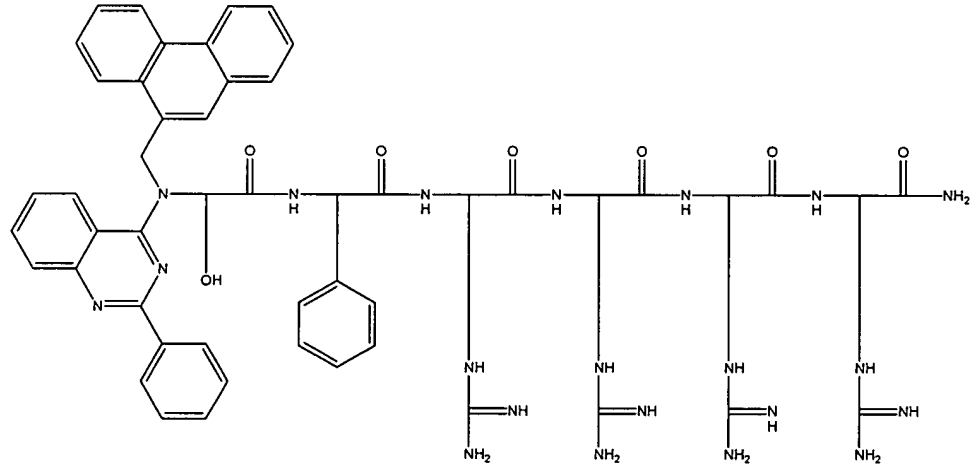
Compound 133



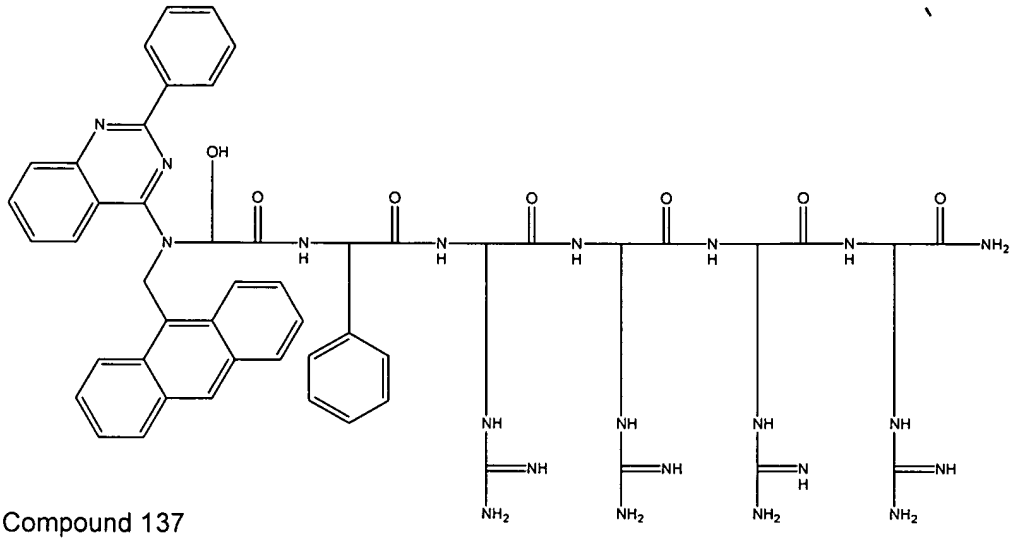
Compound 134



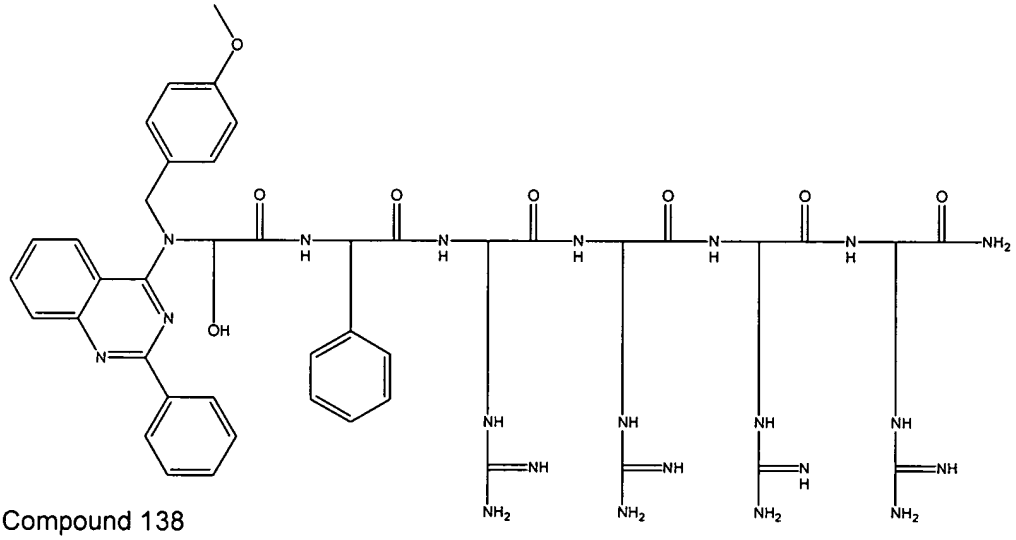
Compound 135



Compound 136

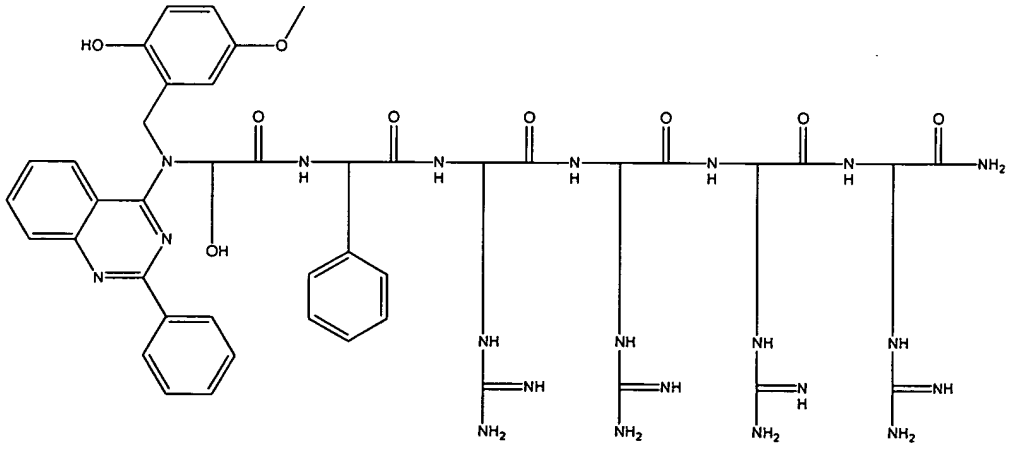


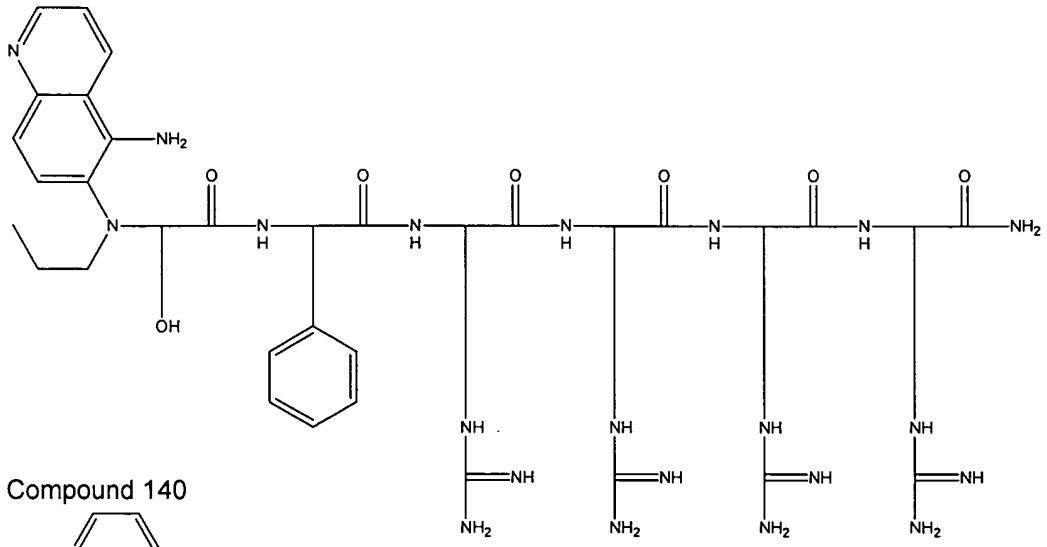
Compound 137



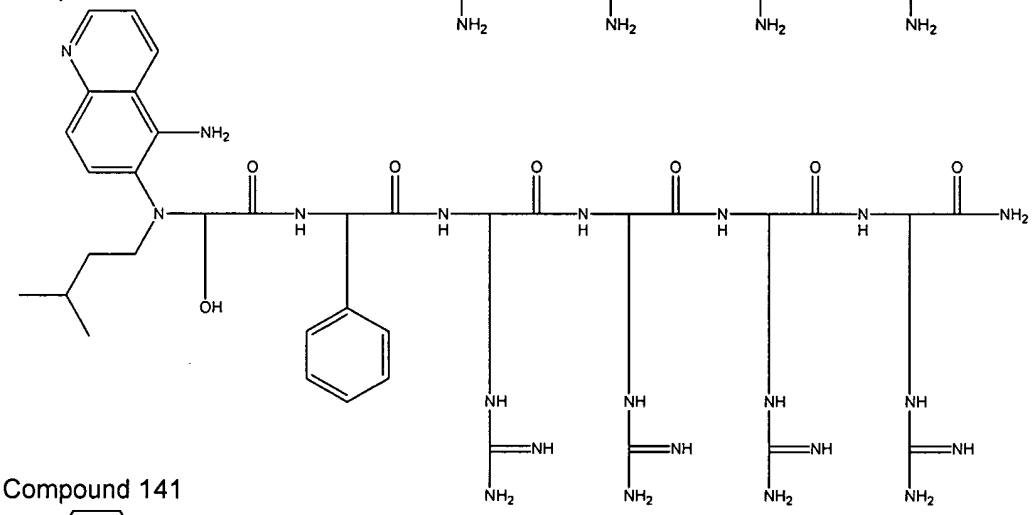
Compound 138

Compound 139

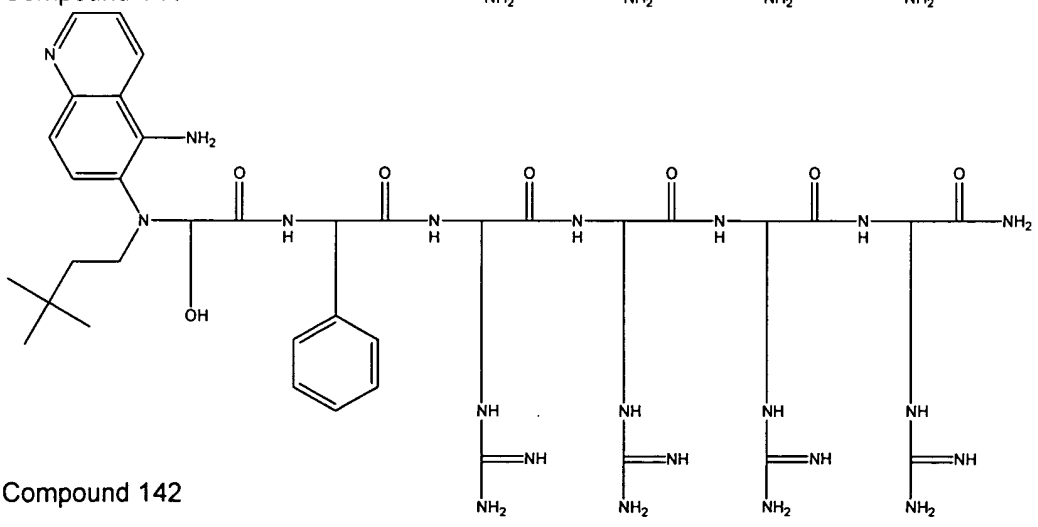




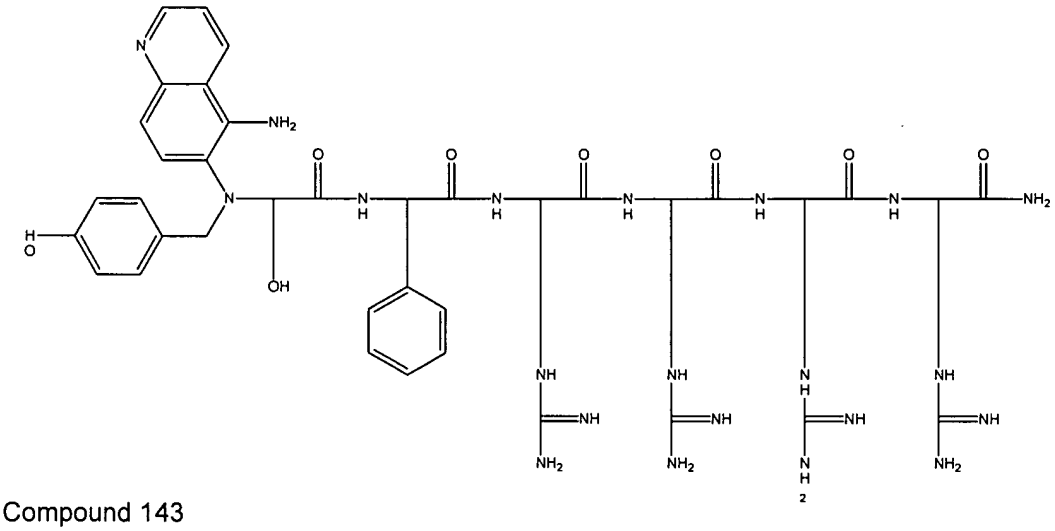
Compound 140



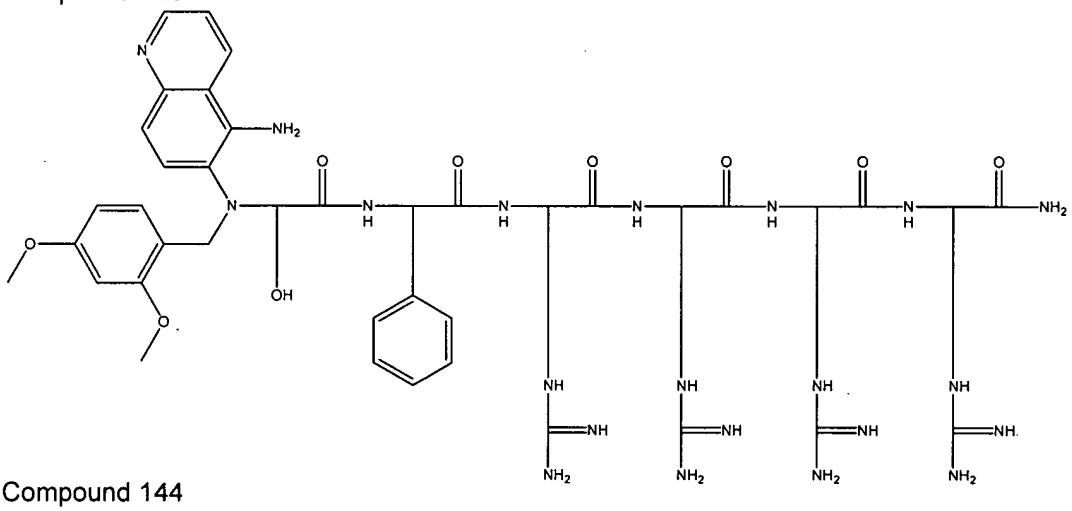
Compound 141



Compound 142

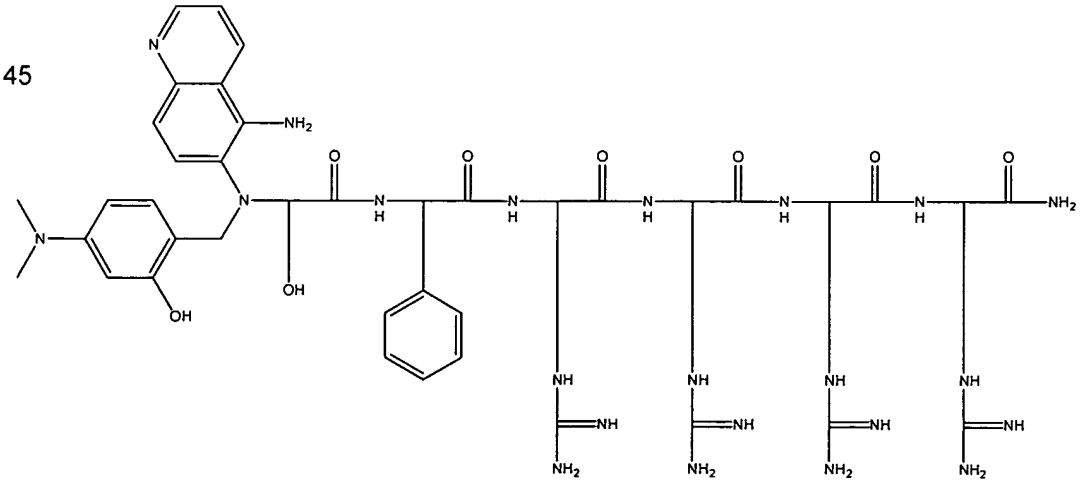


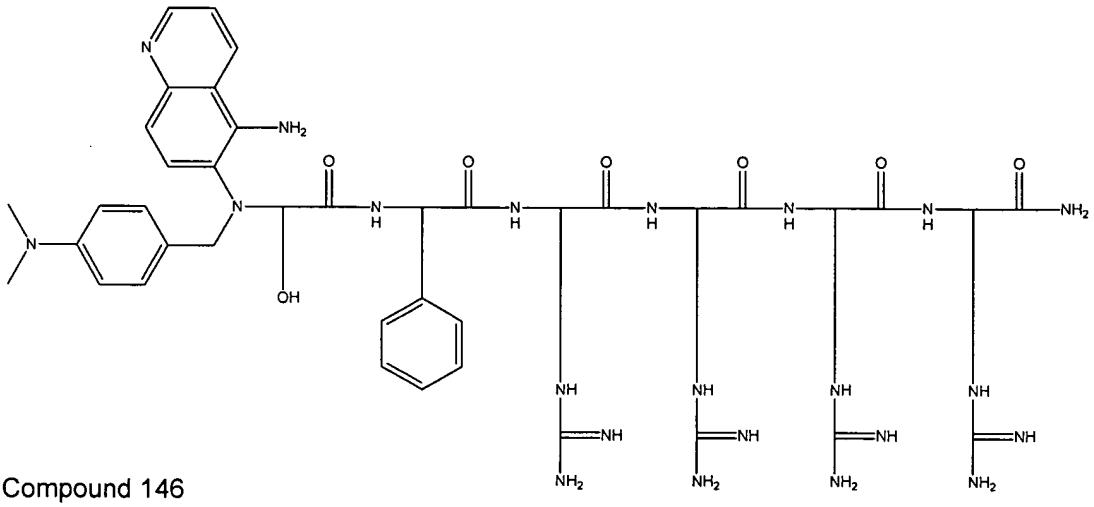
Compound 143



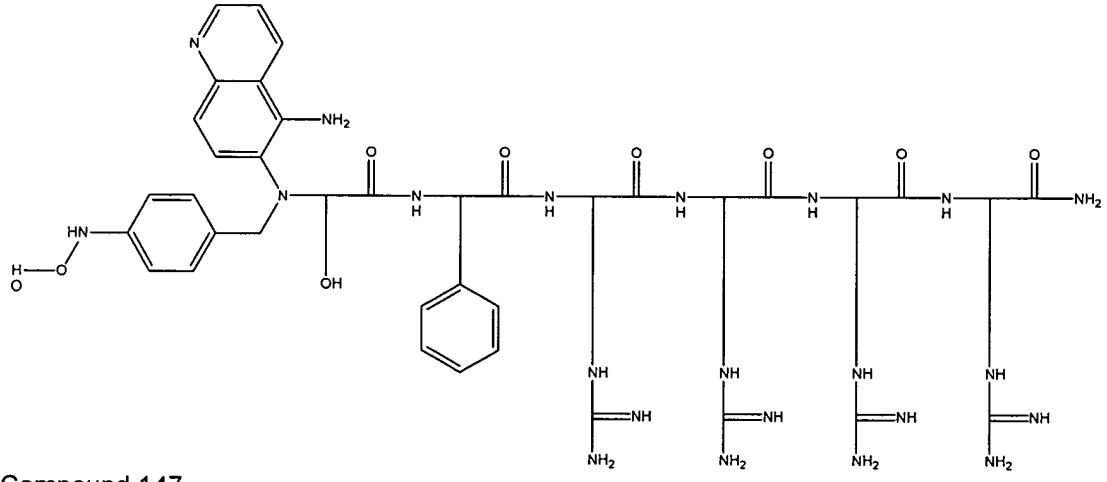
Compound 144

Compound 145

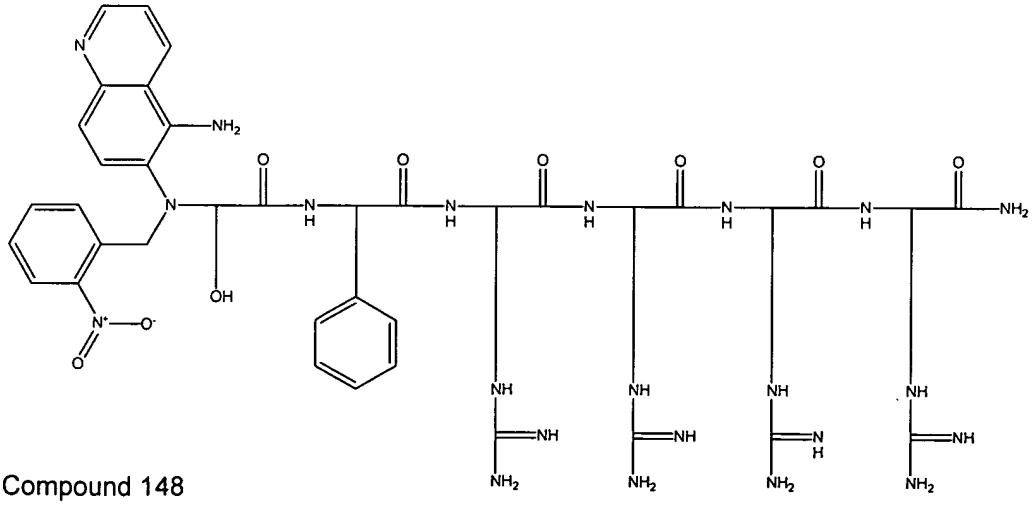




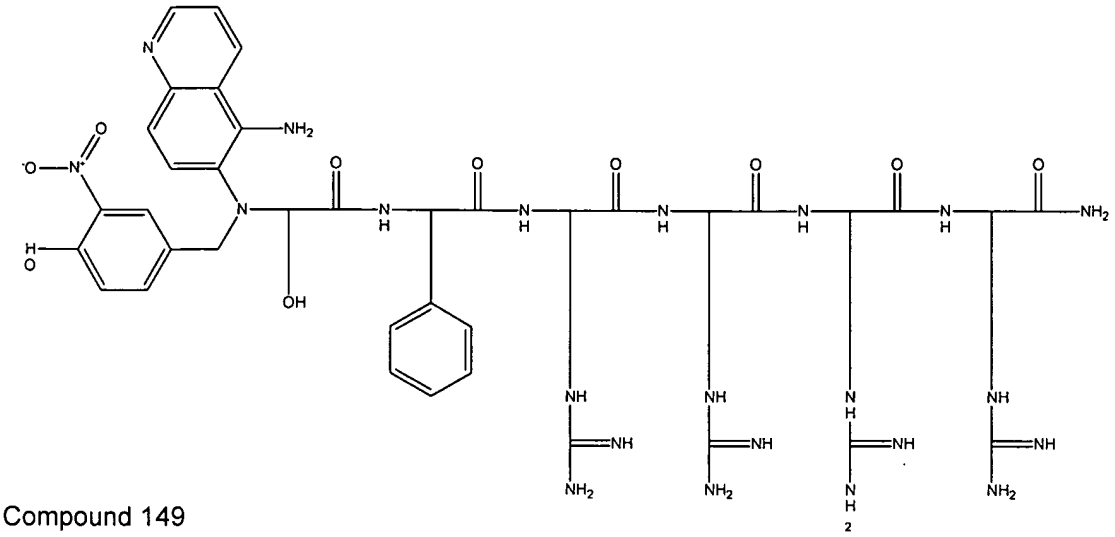
Compound 146



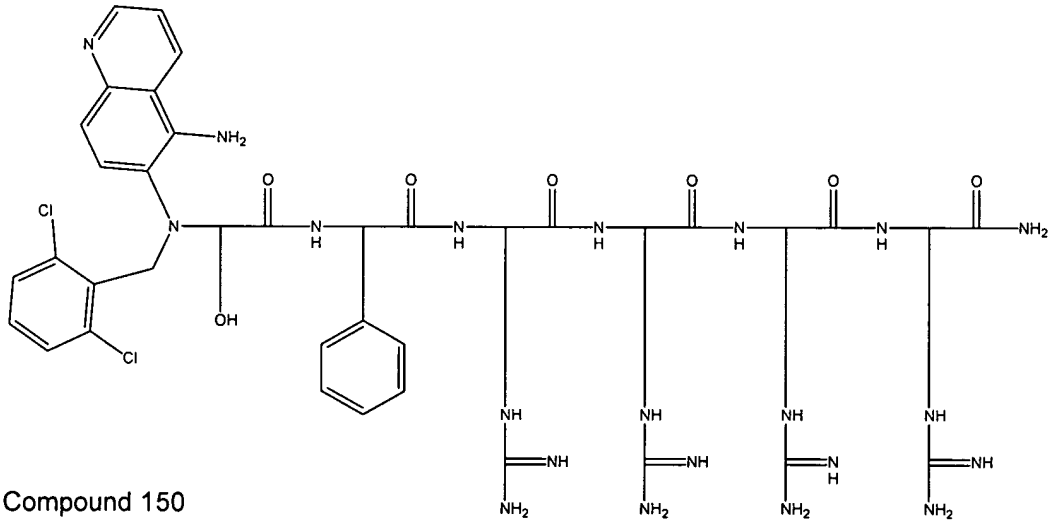
Compound 147



Compound 148

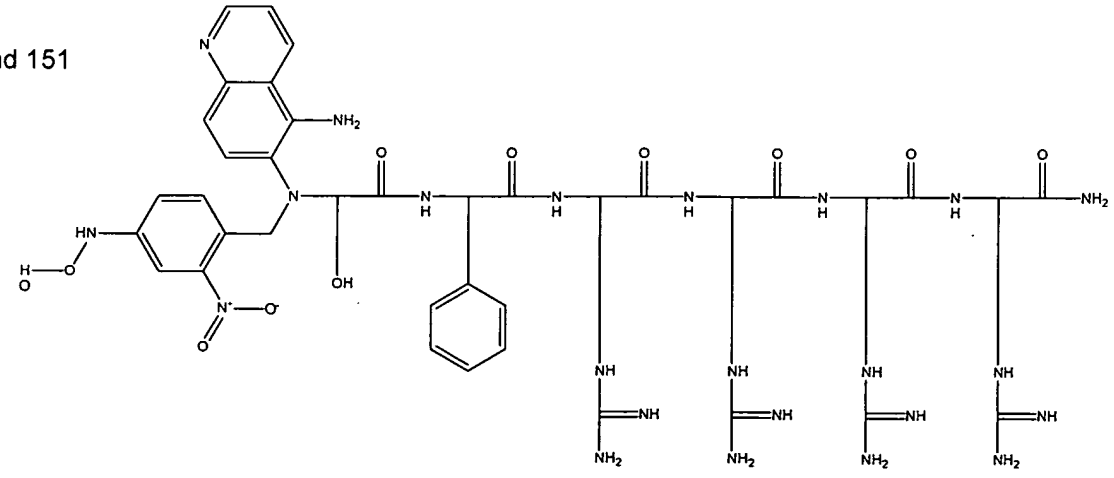


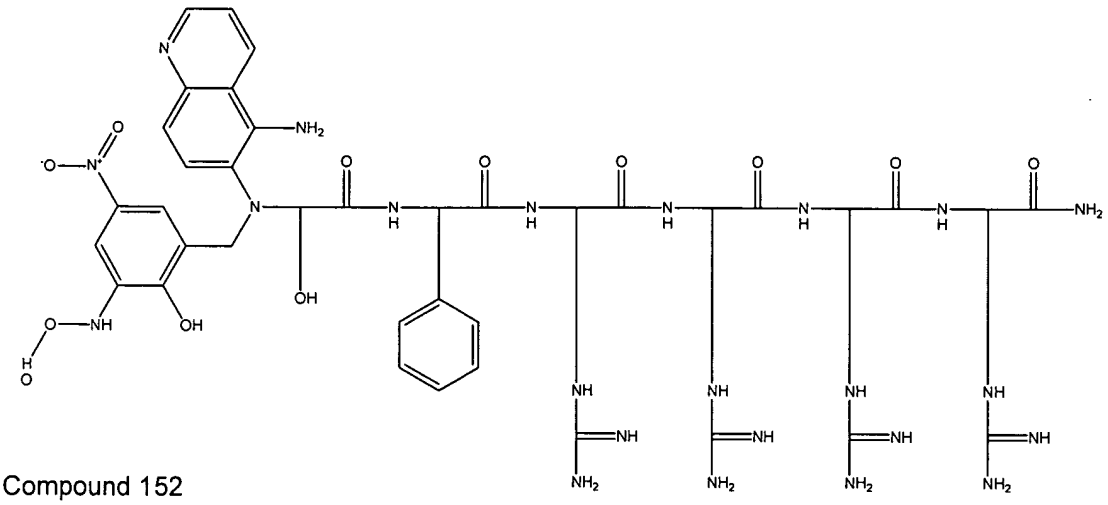
Compound 149



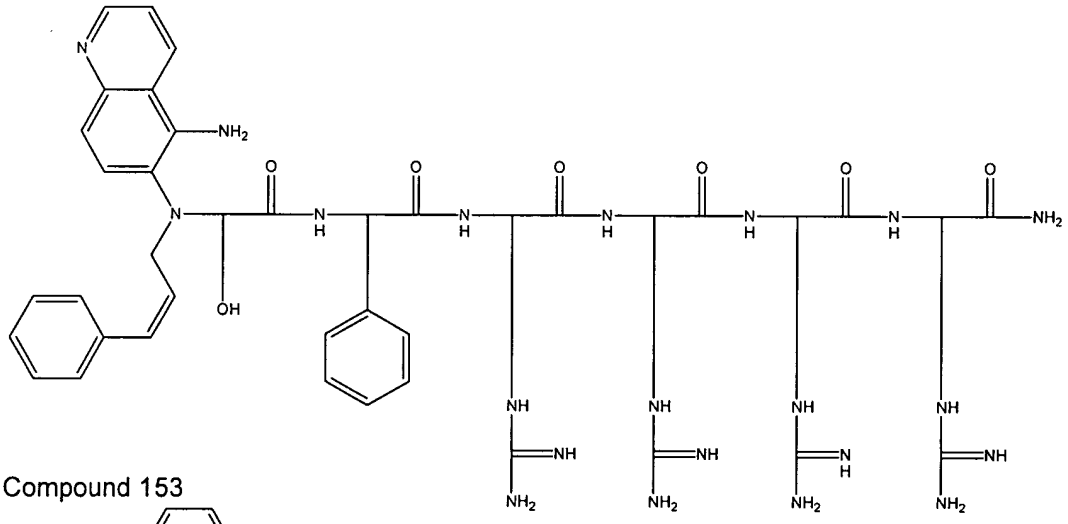
Compound 150

Compound 151

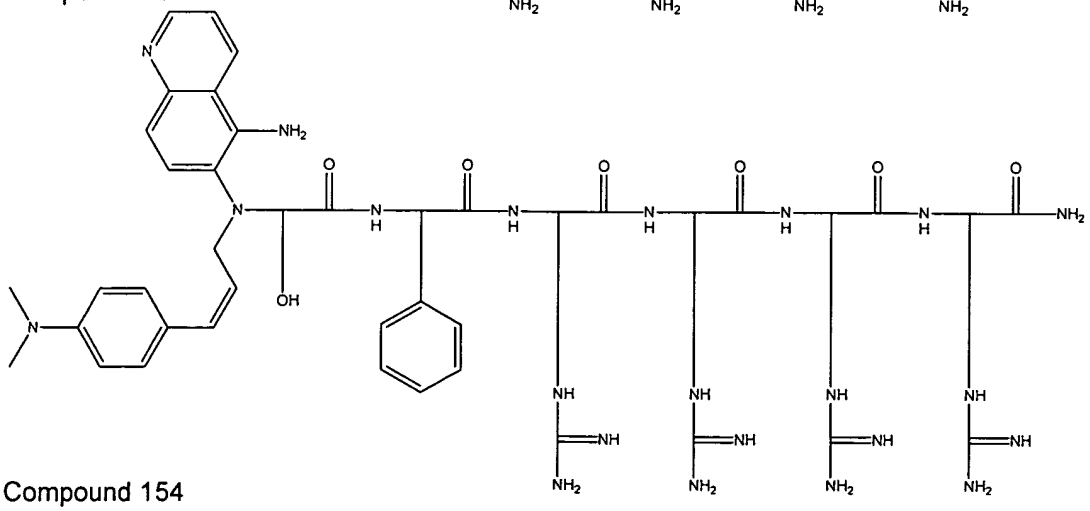




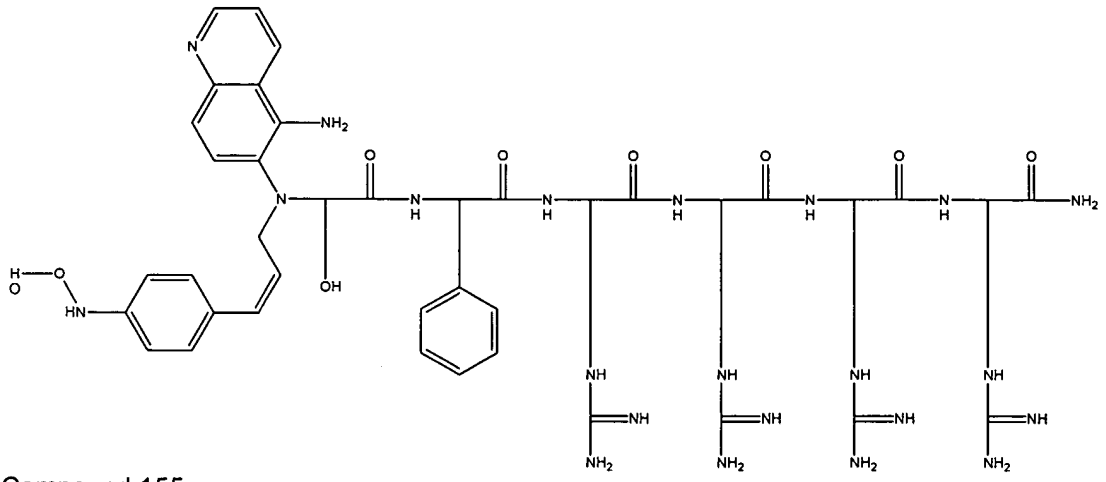
Compound 152



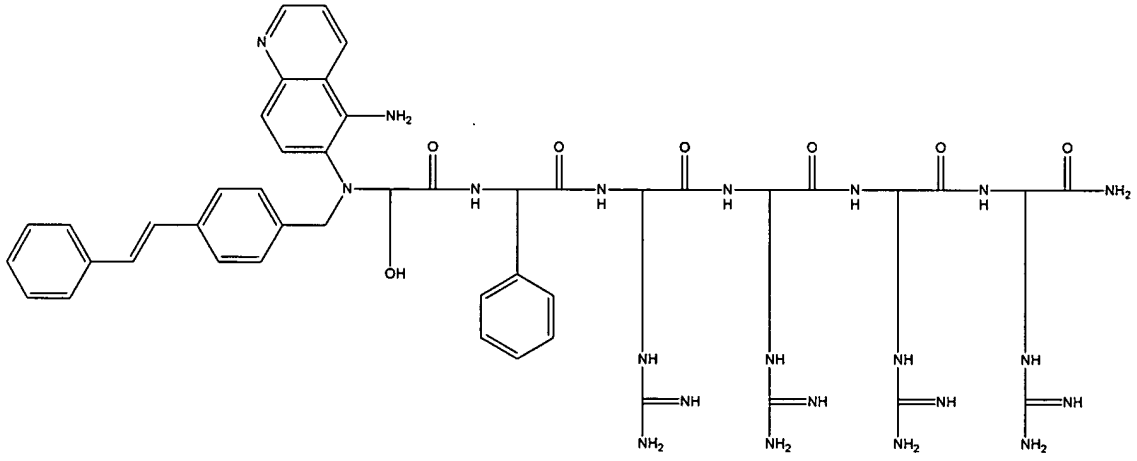
Compound 153



Compound 154

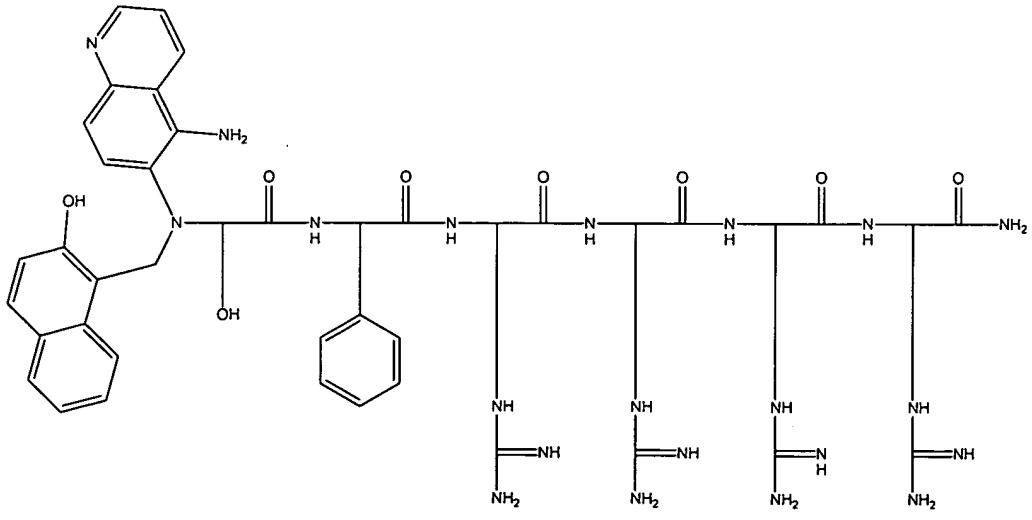


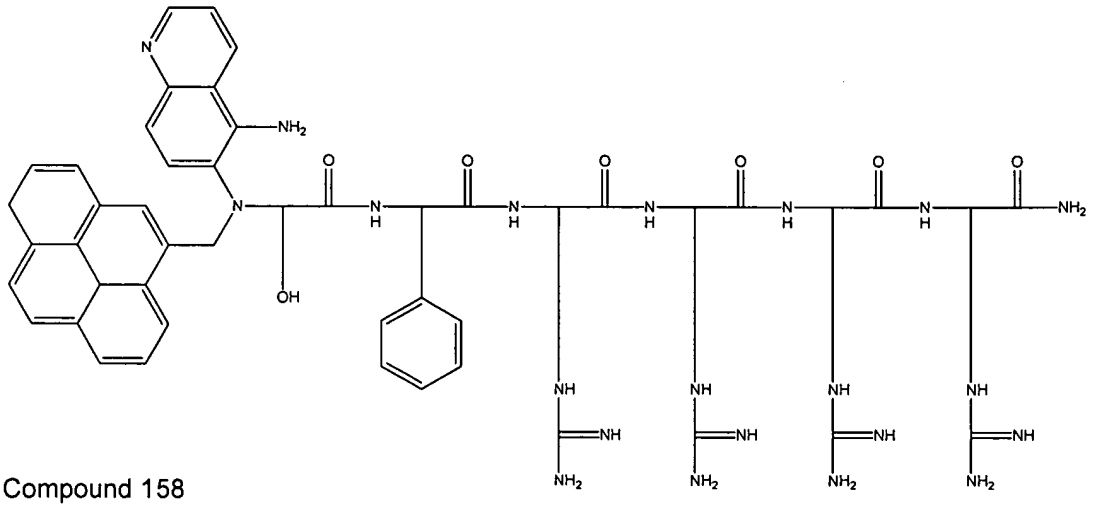
Compound 155



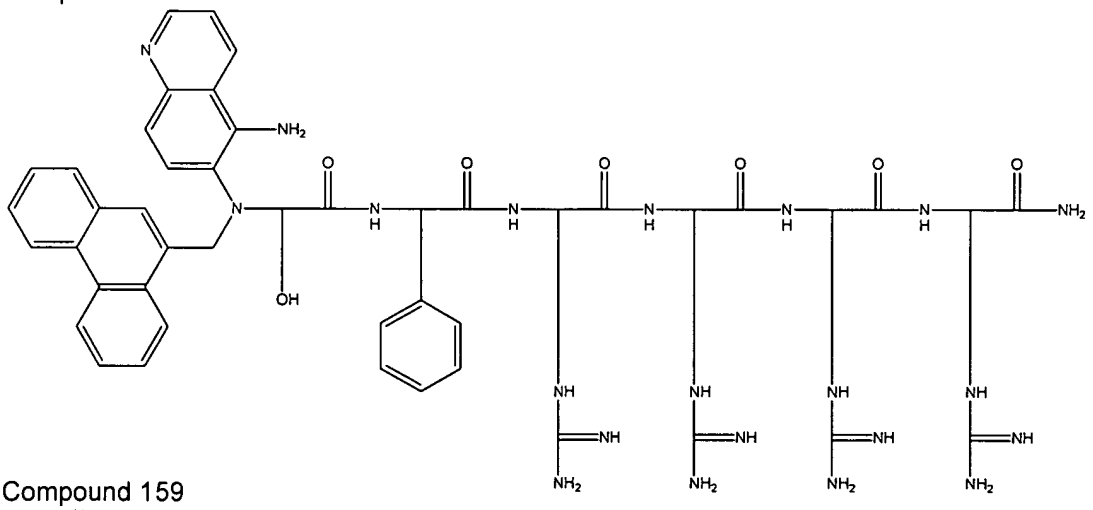
Compound 156

Compound 157

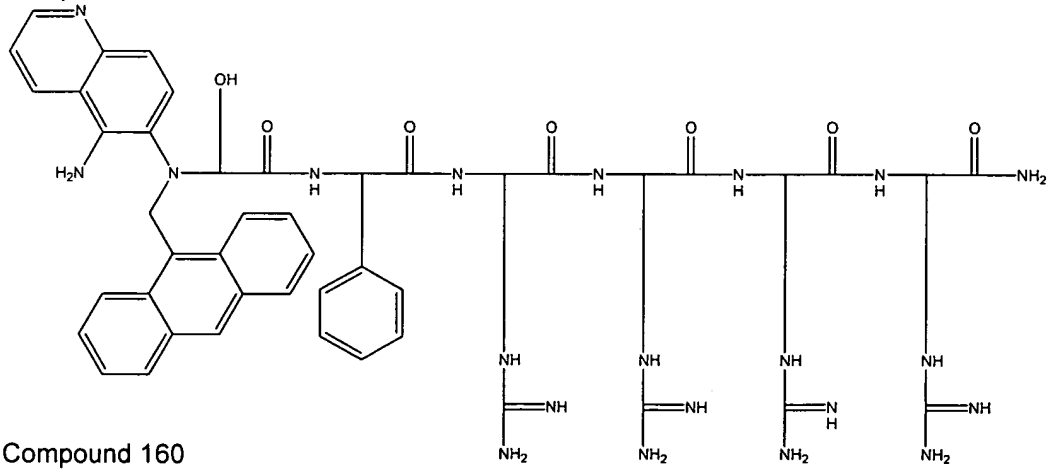




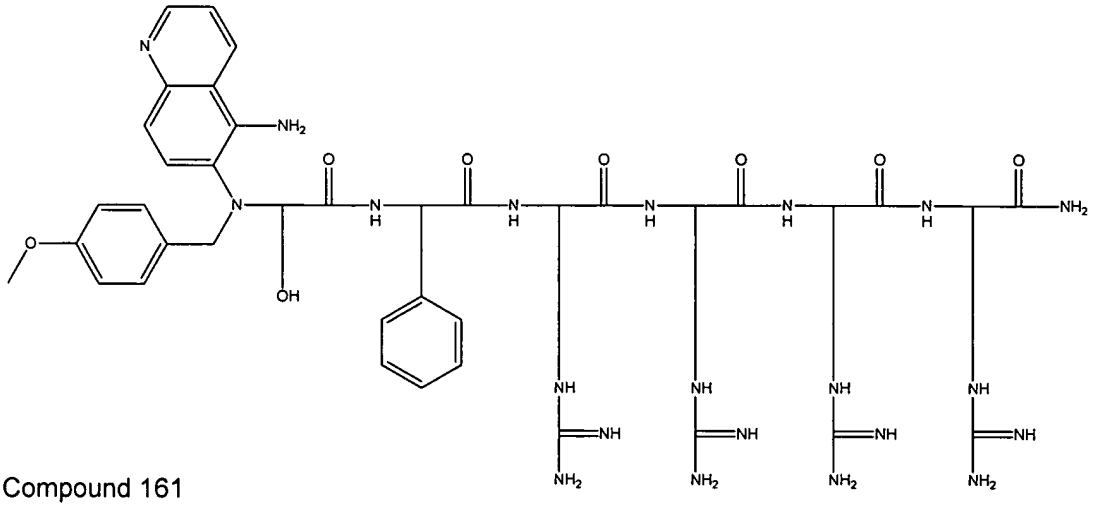
Compound 158



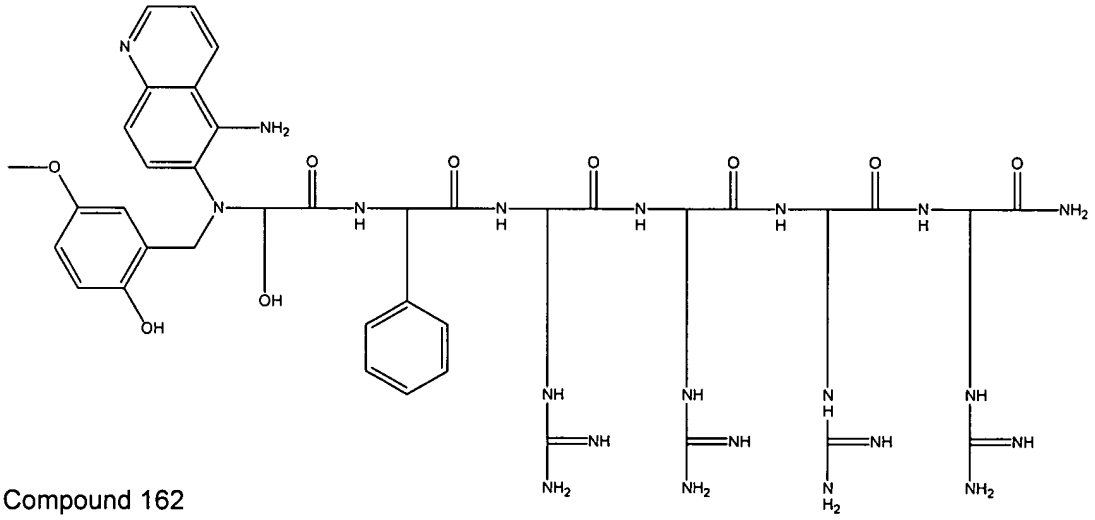
Compound 159



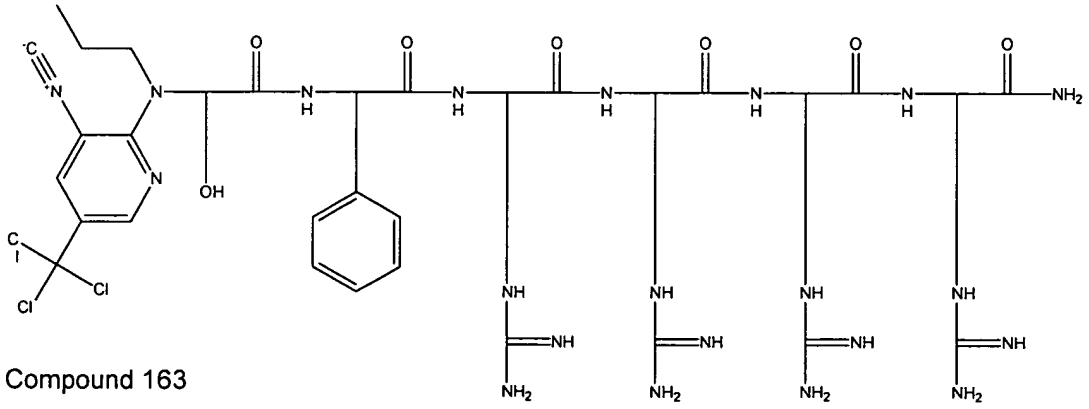
Compound 160



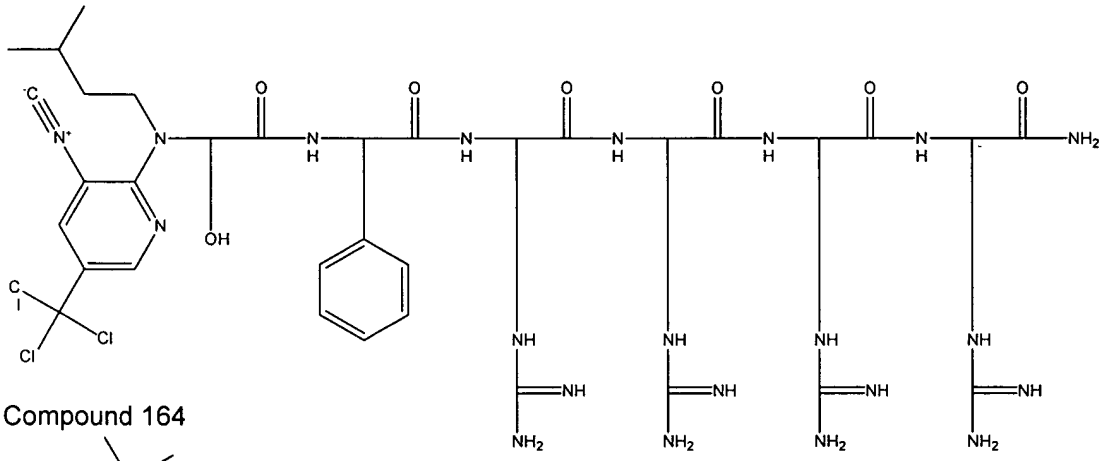
Compound 161



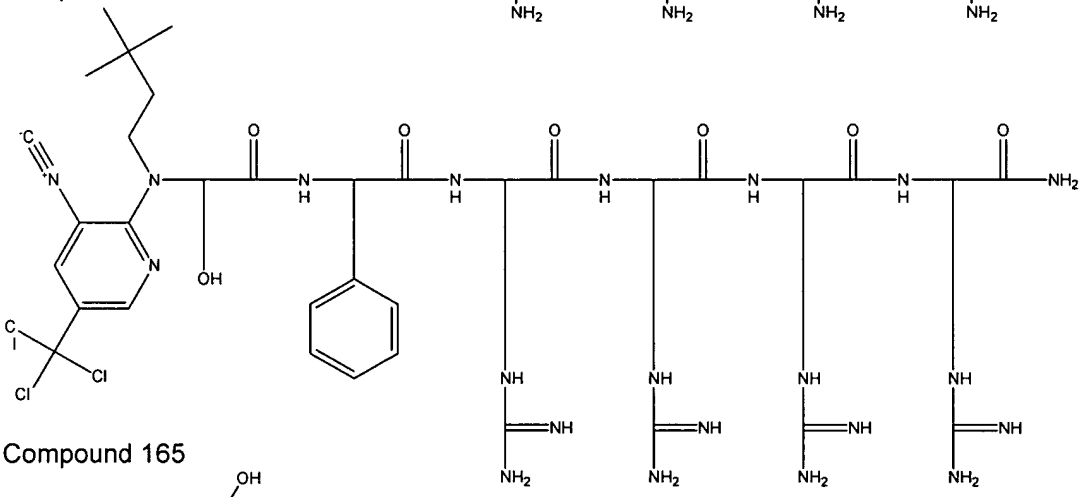
Compound 162



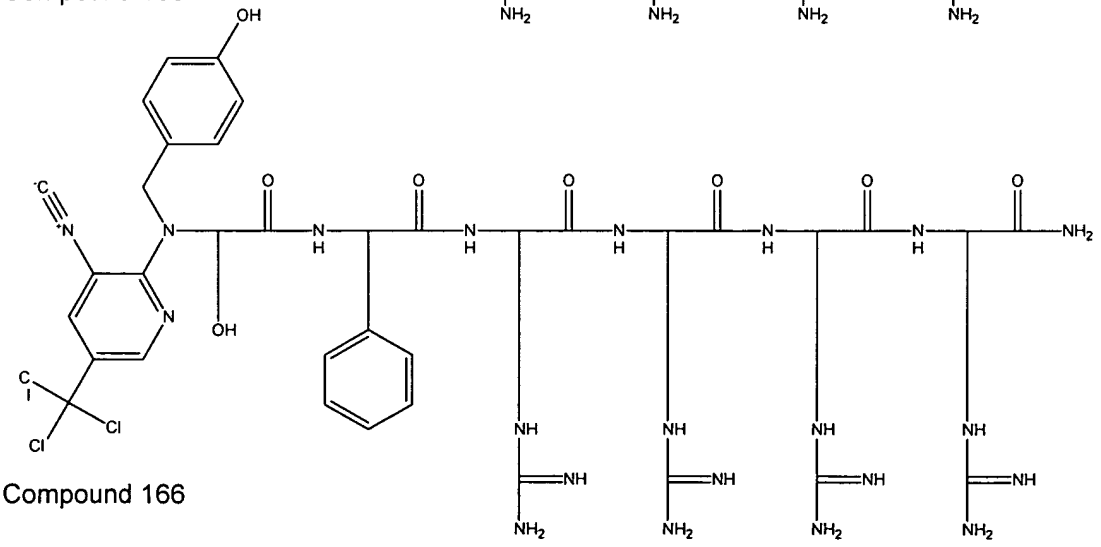
Compound 163



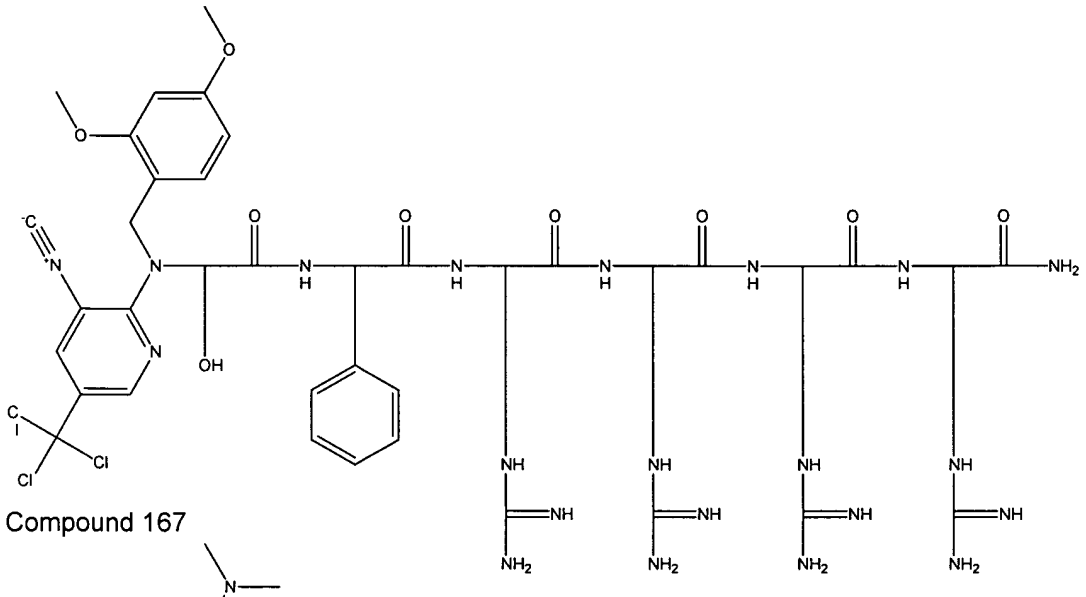
Compound 164



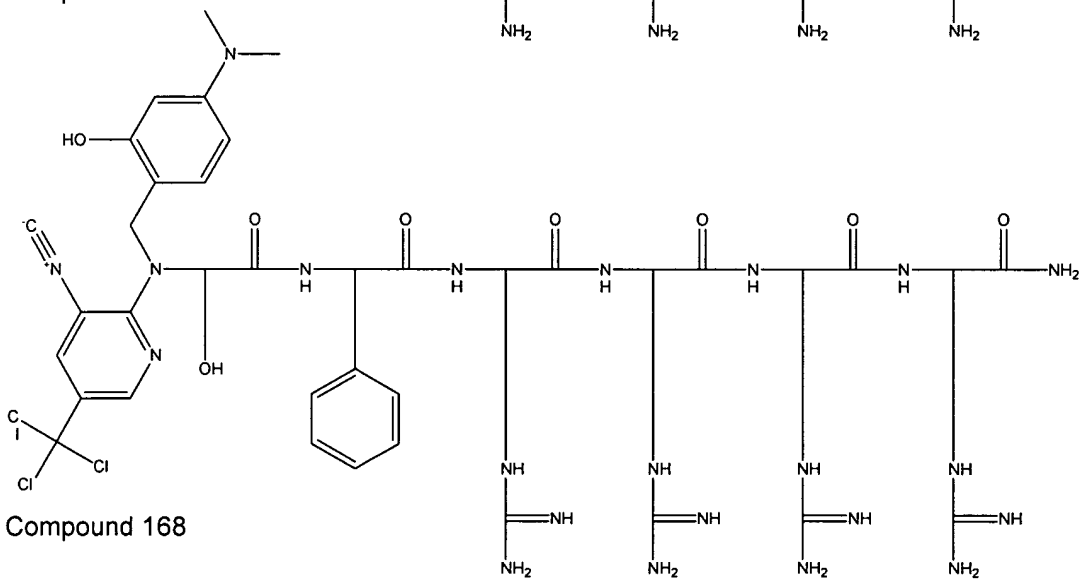
Compound 165



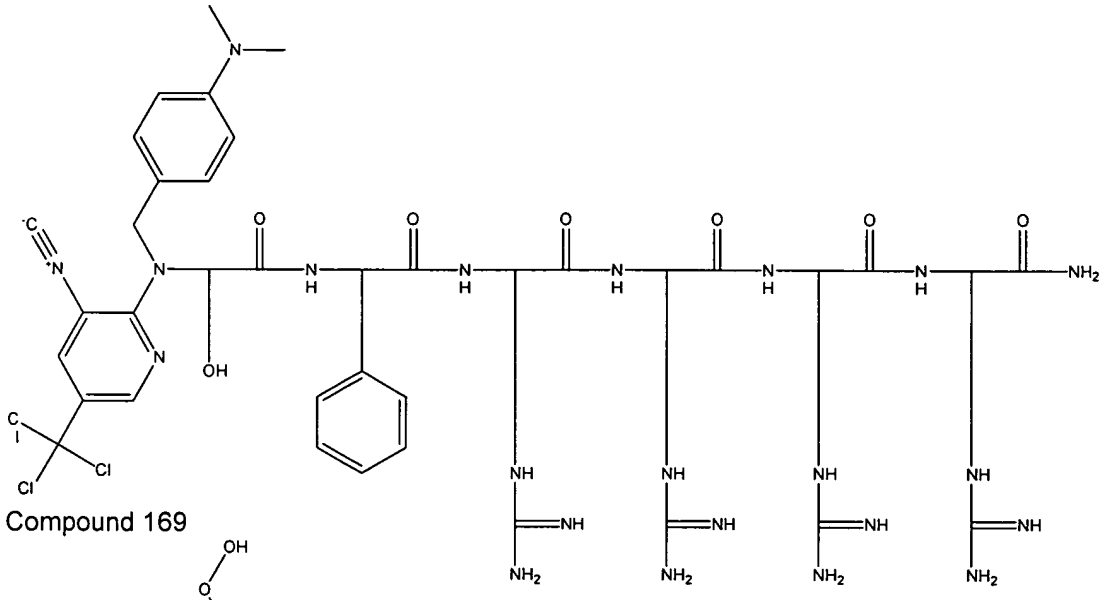
Compound 166



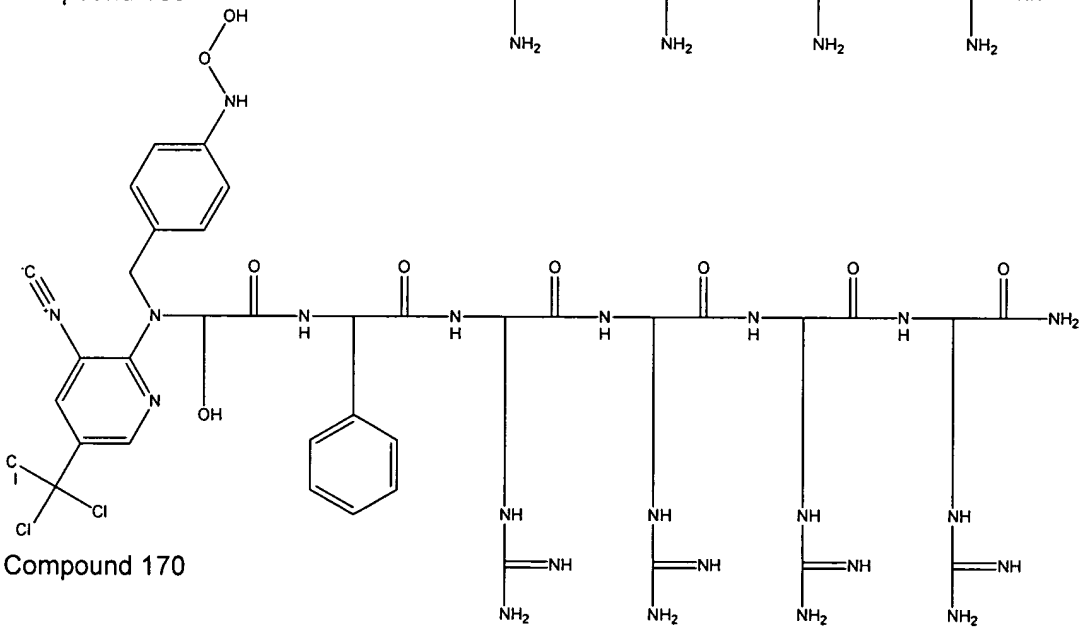
Compound 167



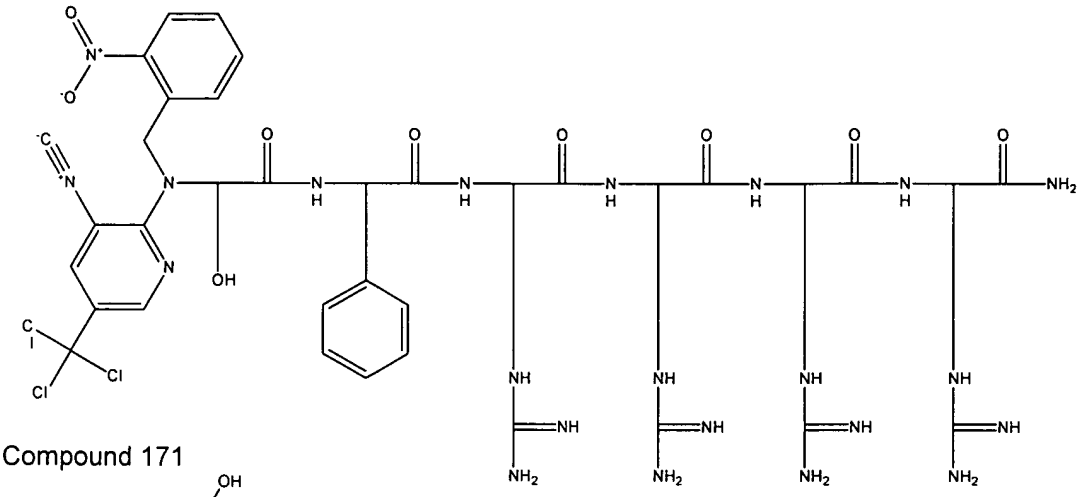
Compound 168



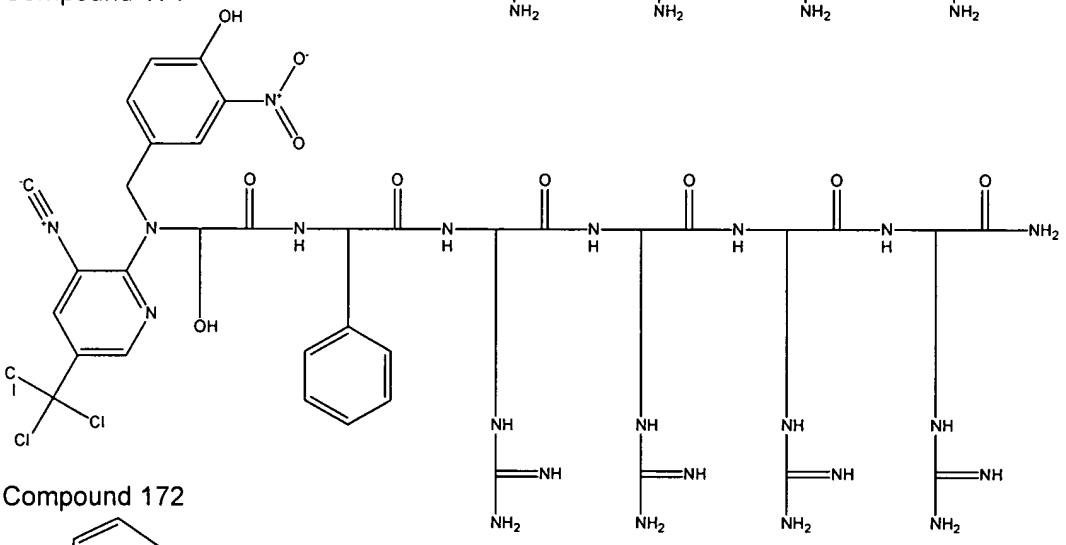
Compound 169



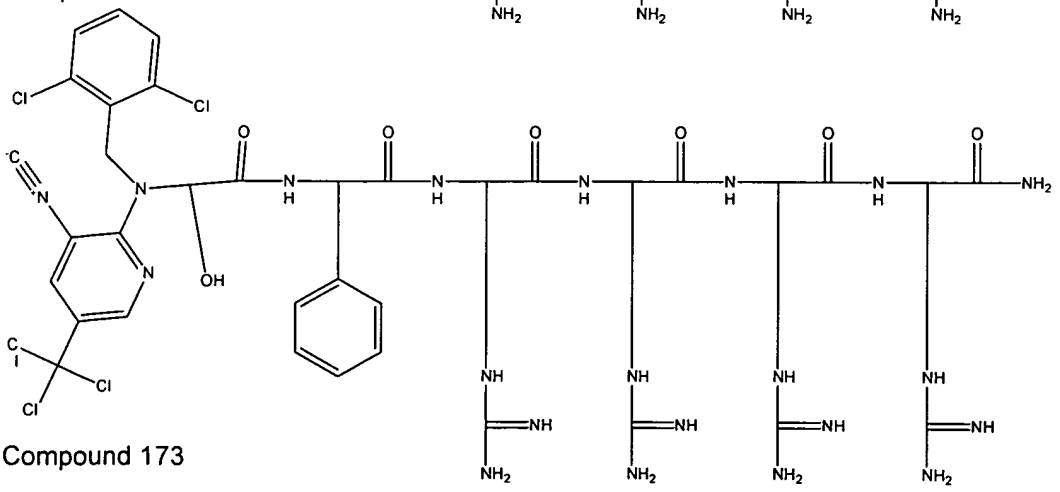
Compound 170



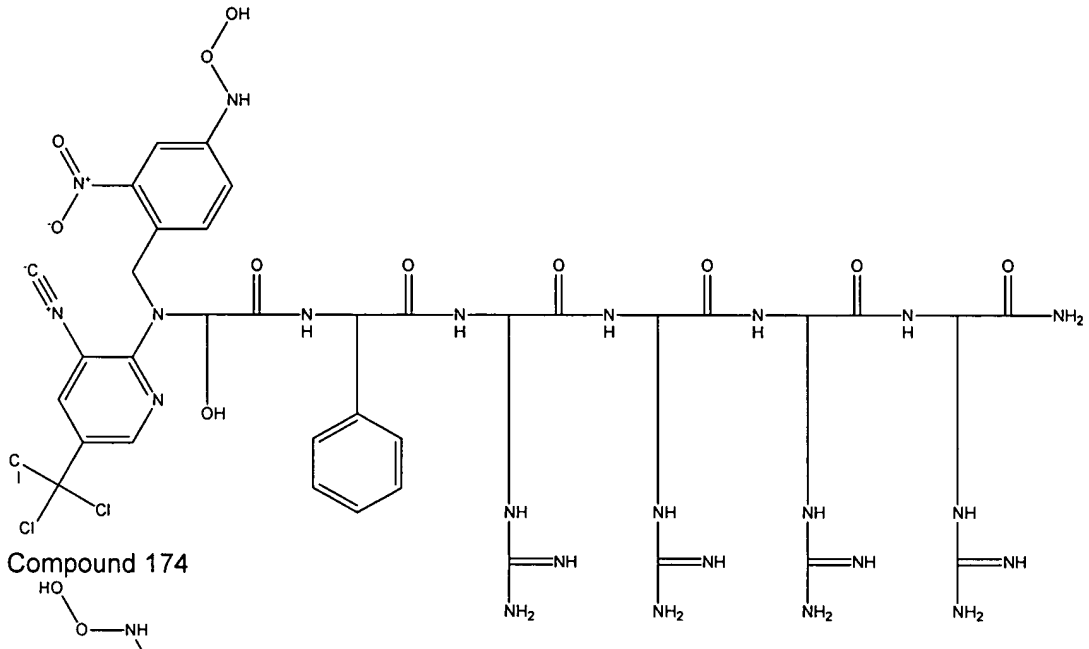
Compound 171



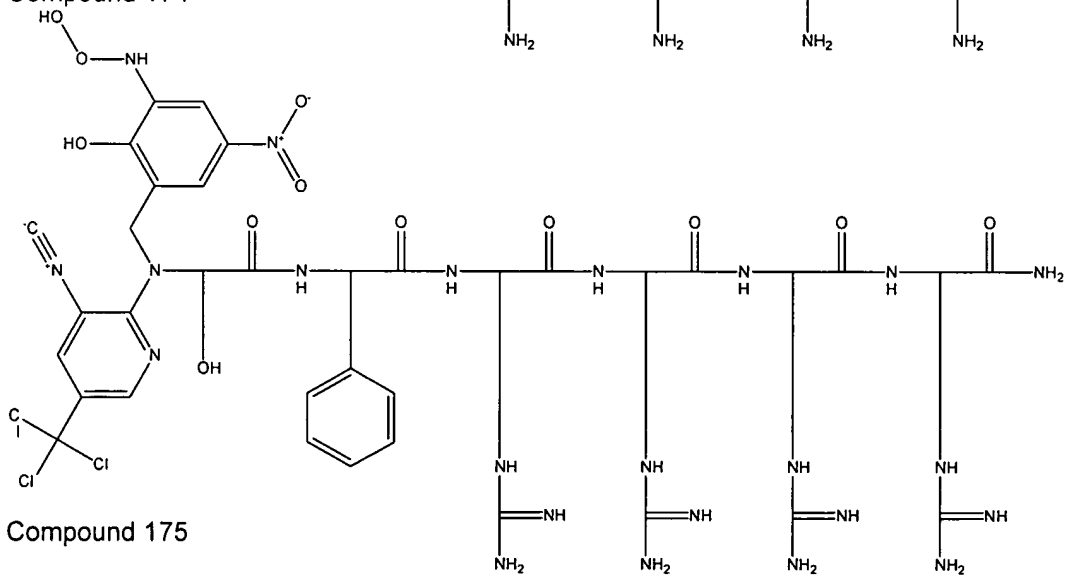
Compound 172



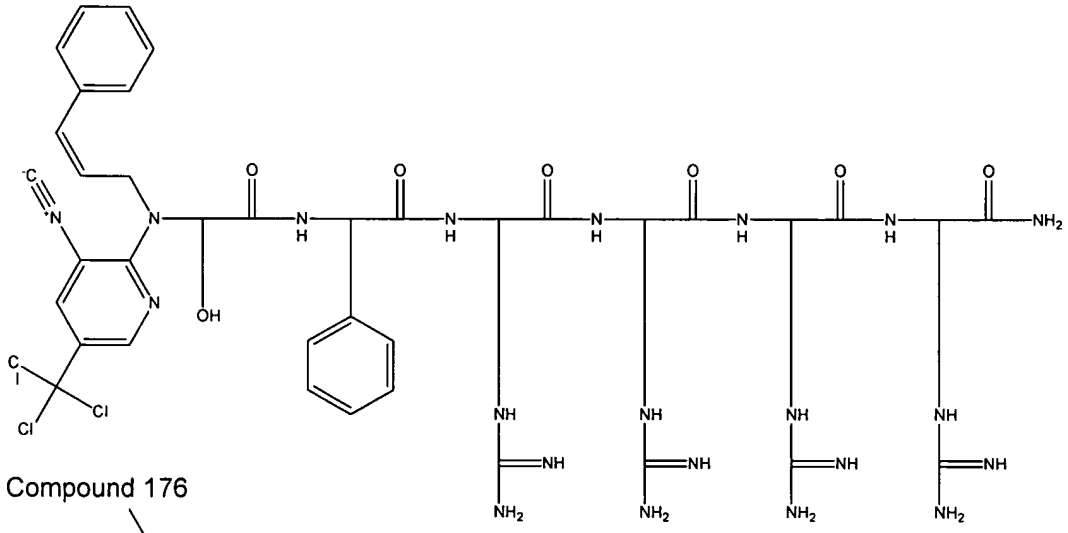
Compound 173



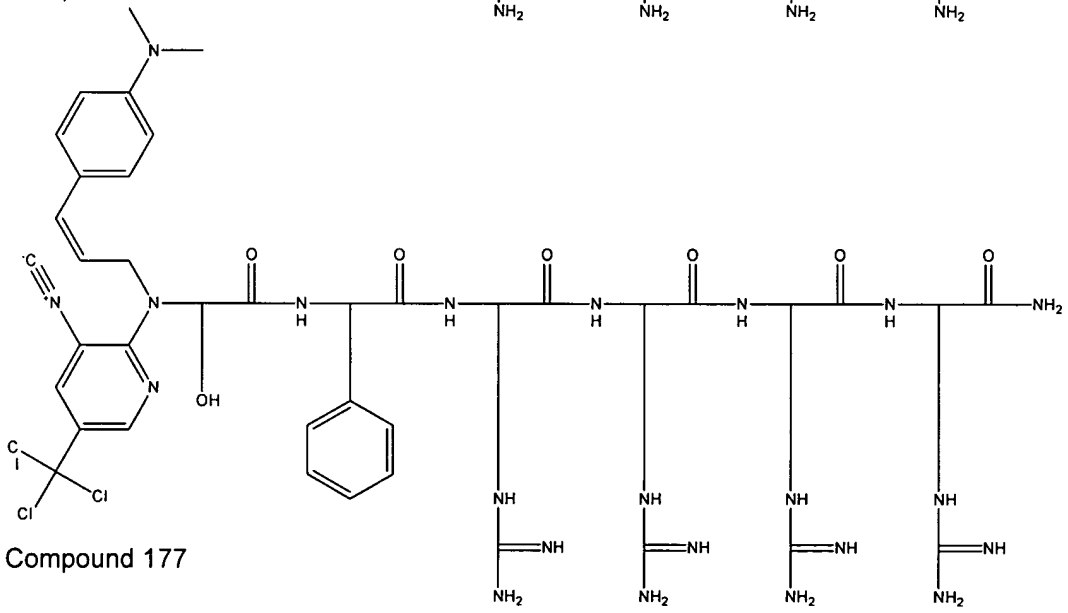
Compound 174



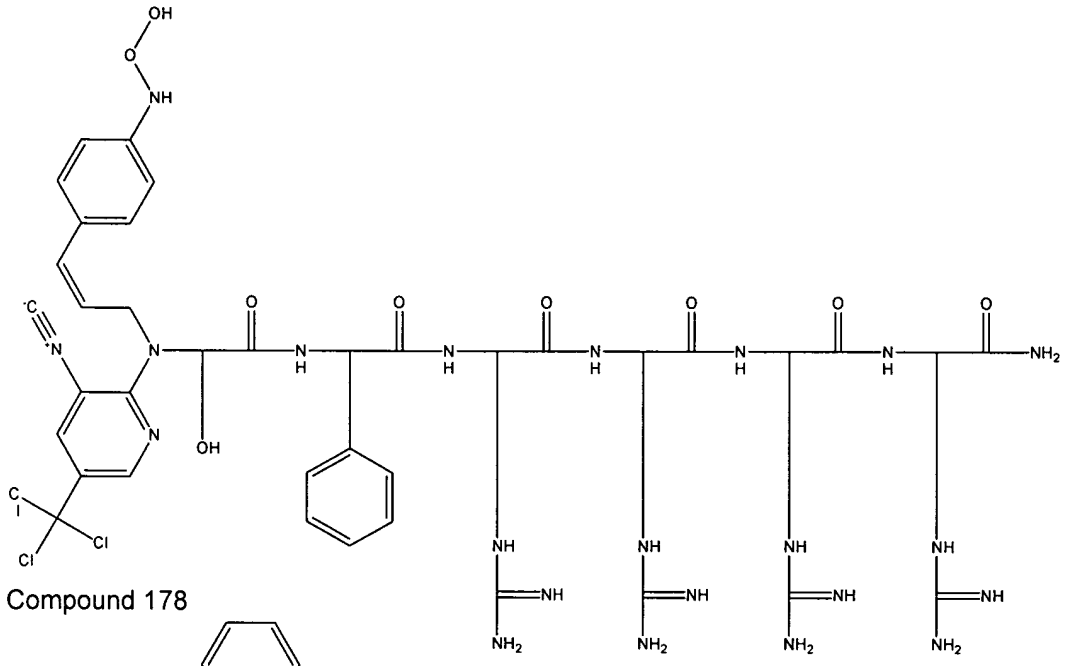
Compound 175



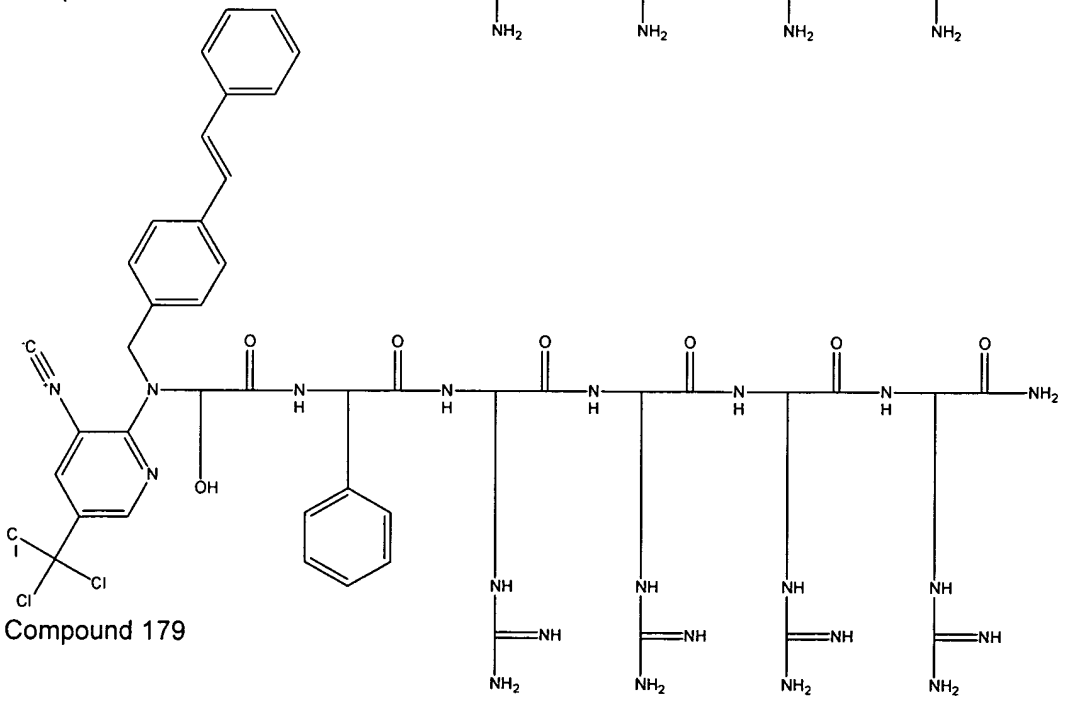
Compound 176



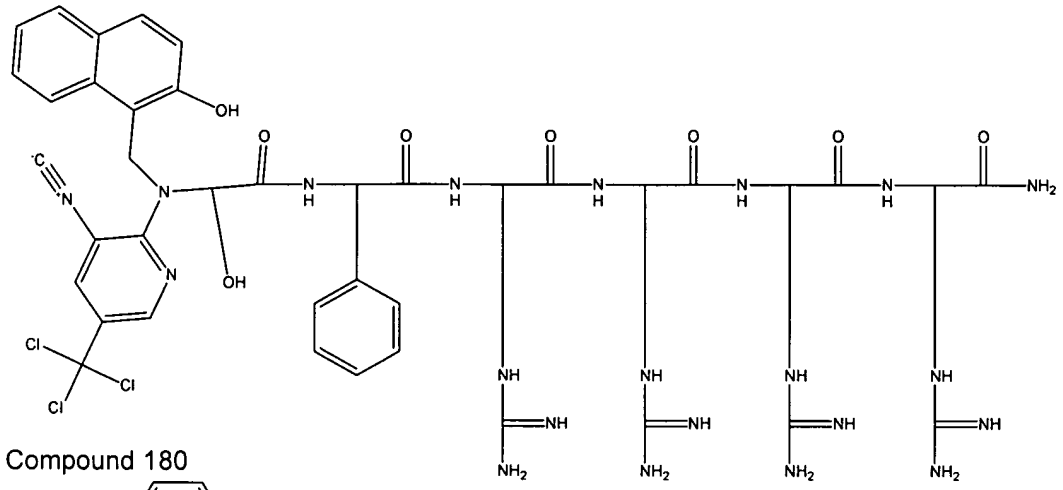
Compound 177



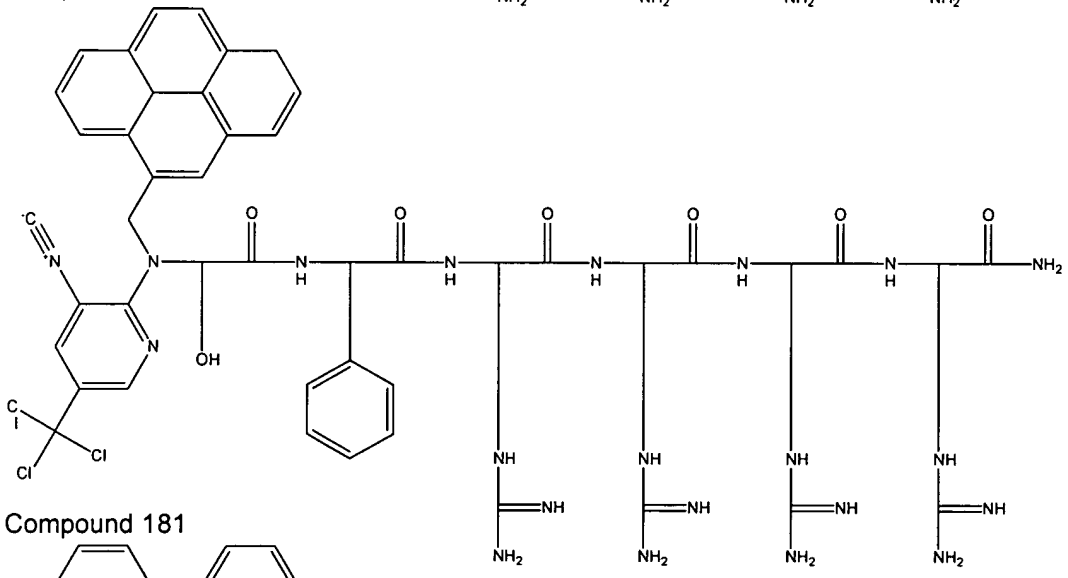
Compound 178



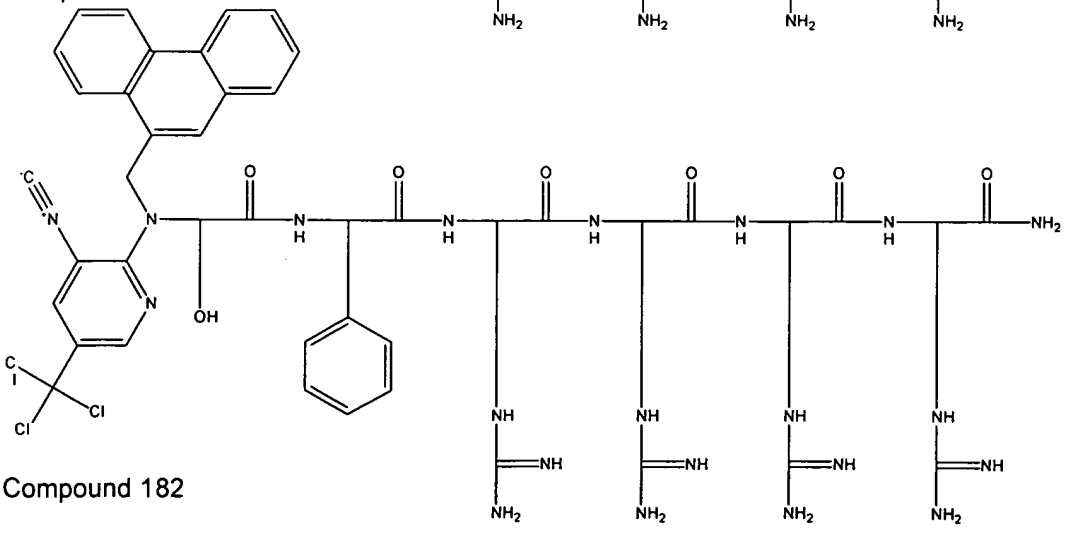
Compound 179



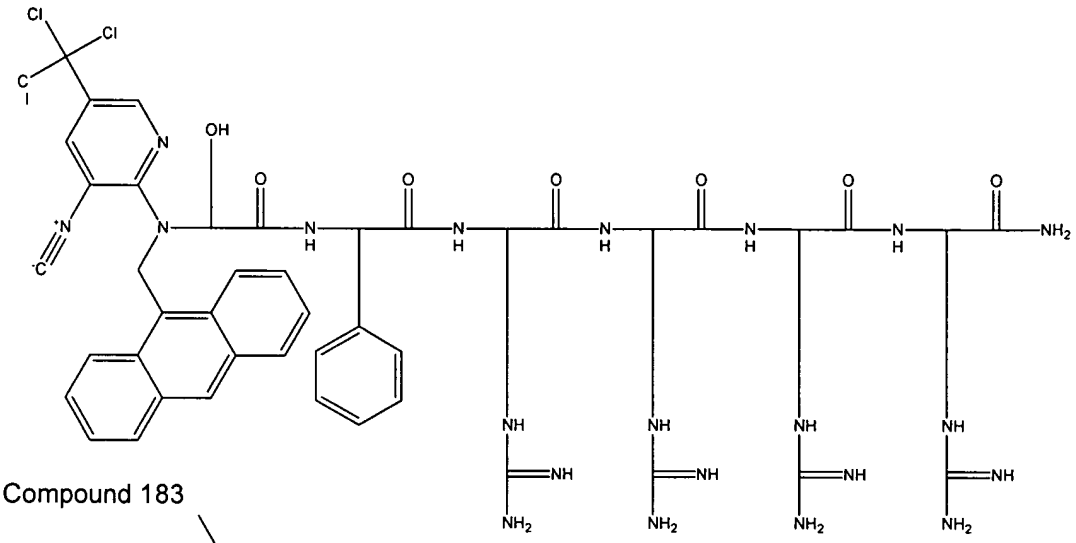
Compound 180



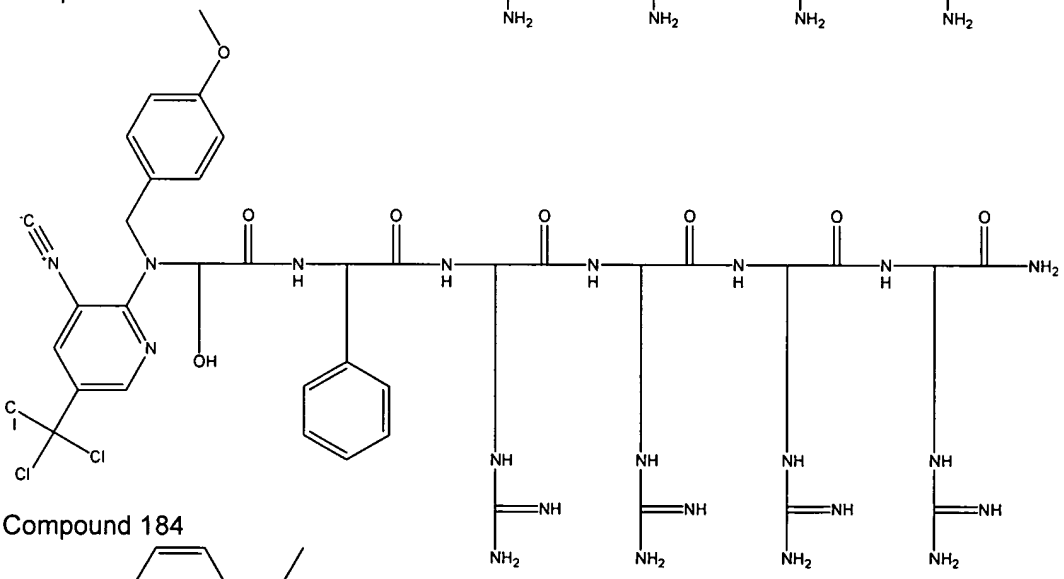
Compound 181



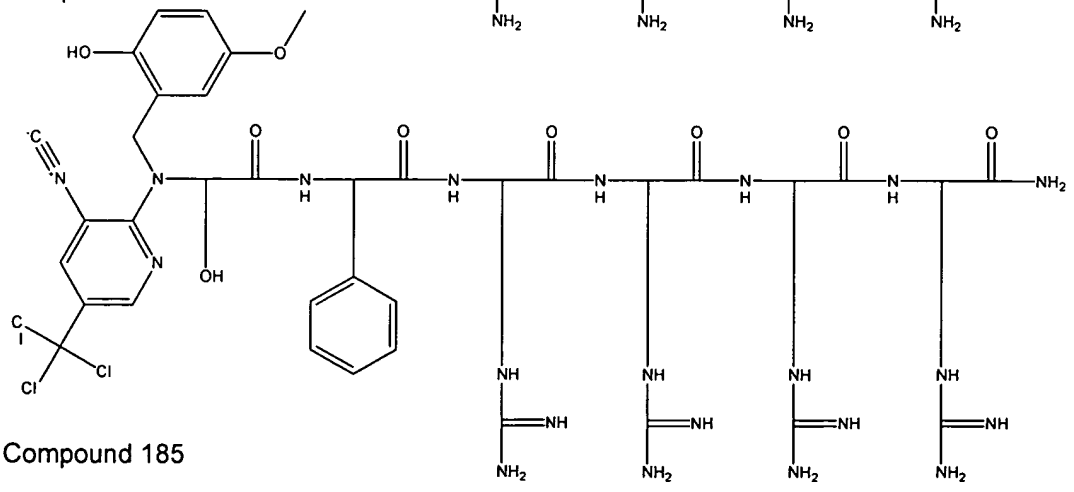
Compound 182



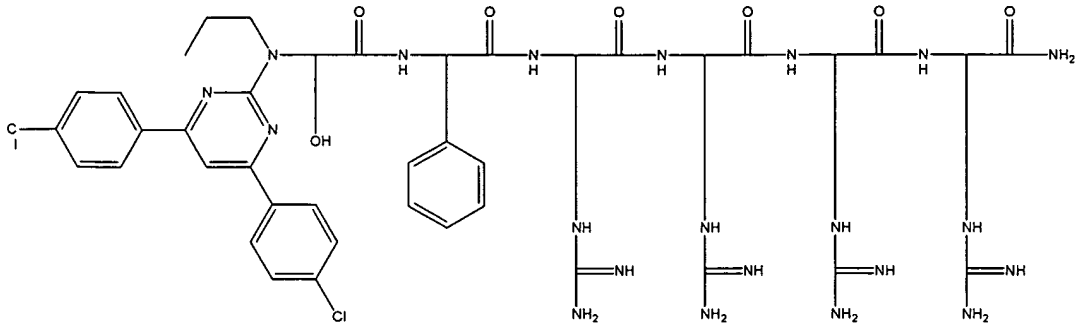
Compound 183



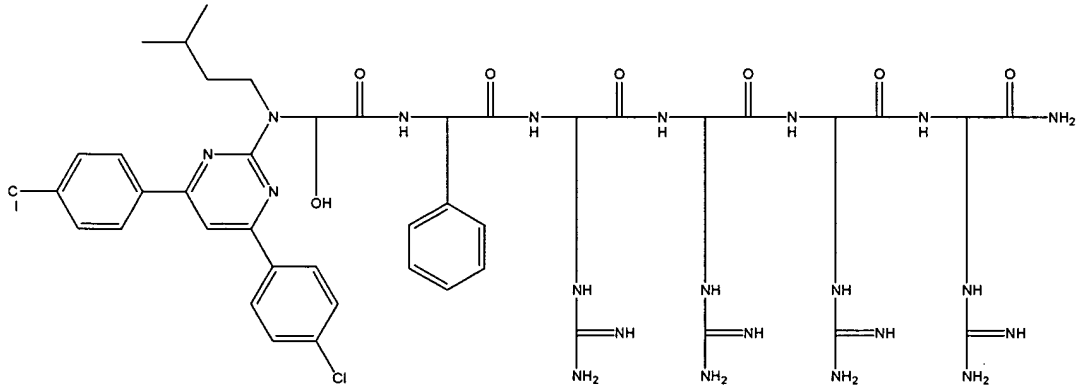
Compound 184



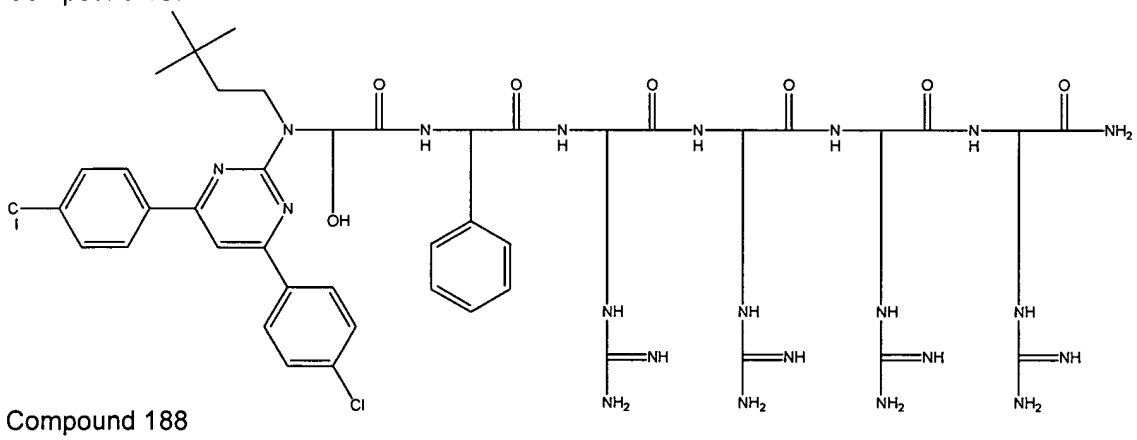
Compound 185



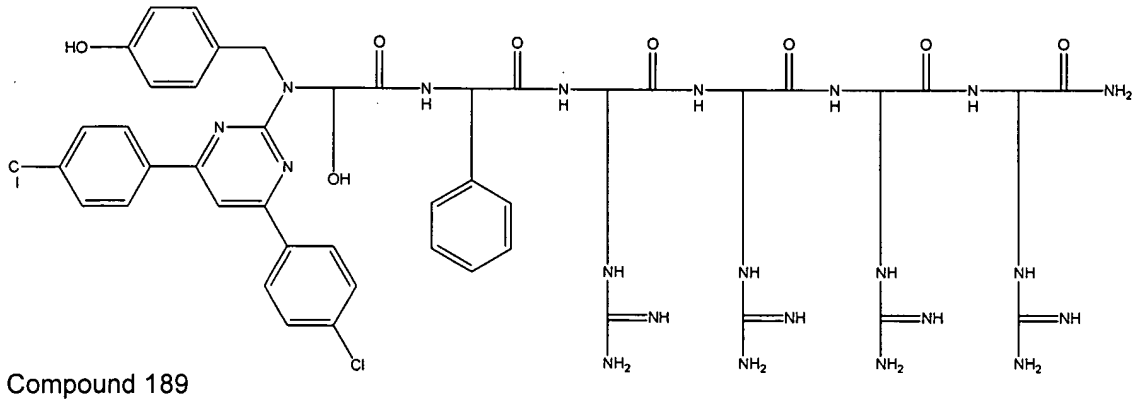
Compound 186



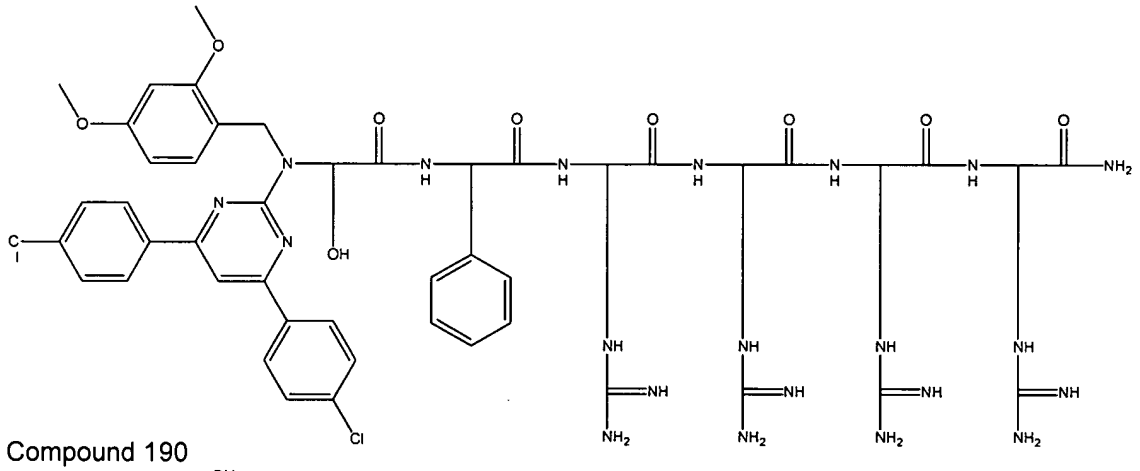
Compound 187



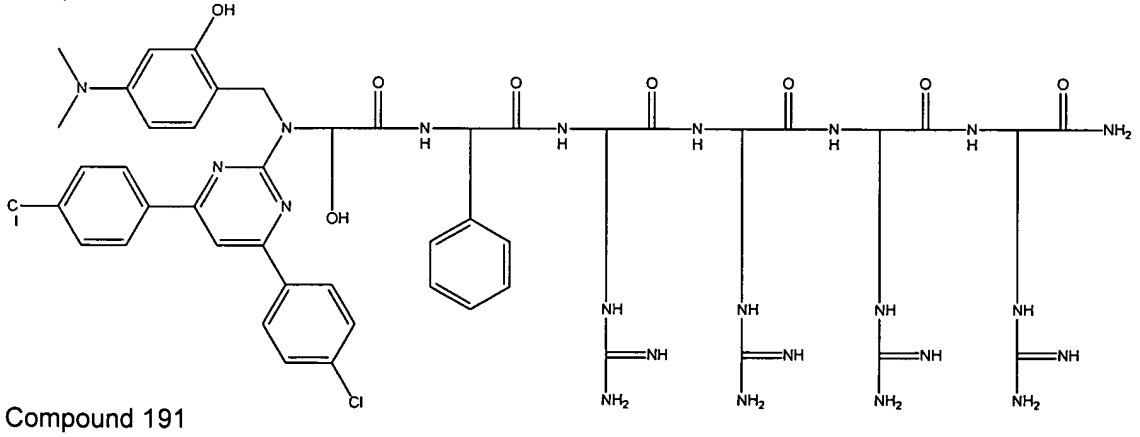
Compound 188



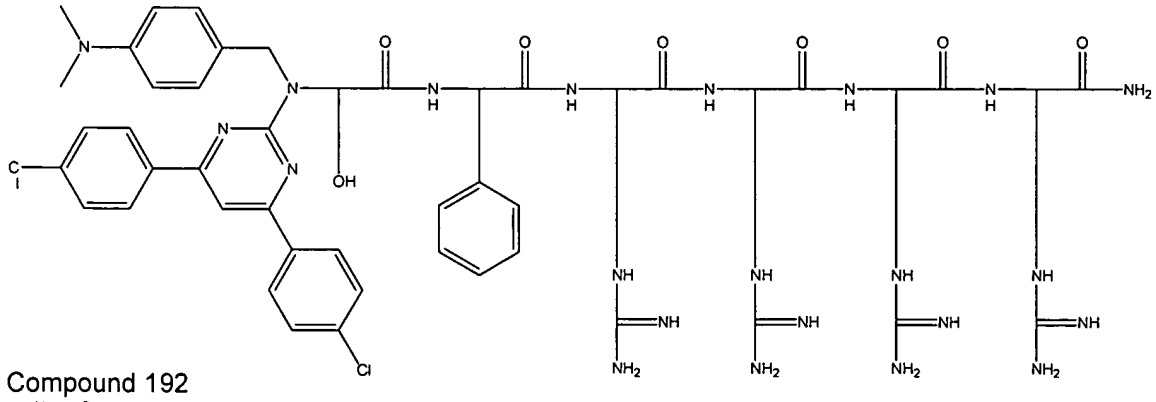
Compound 189



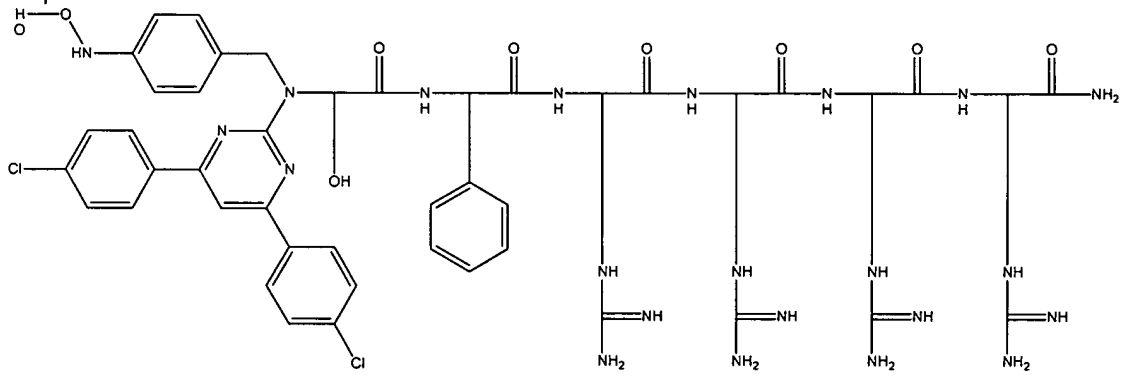
Compound 190



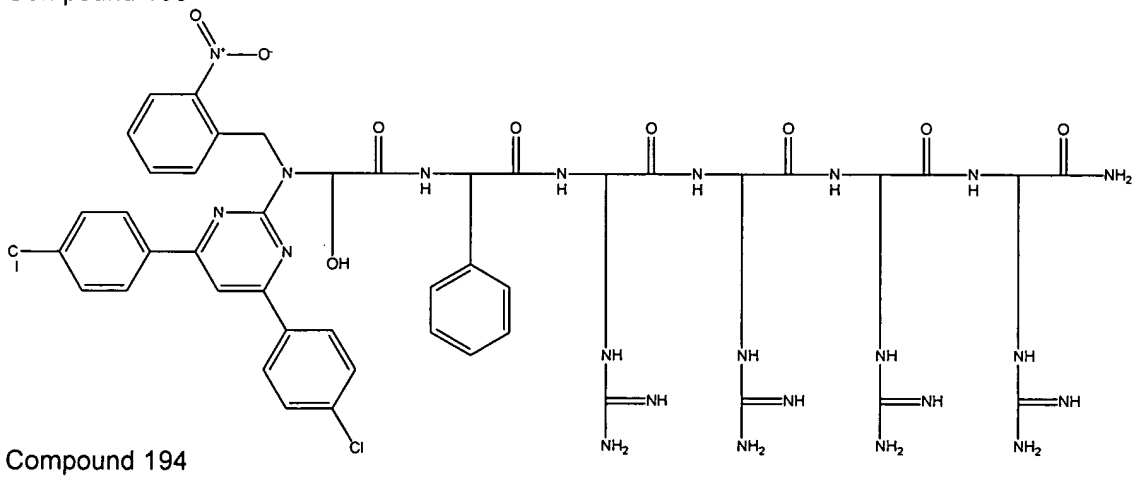
Compound 191



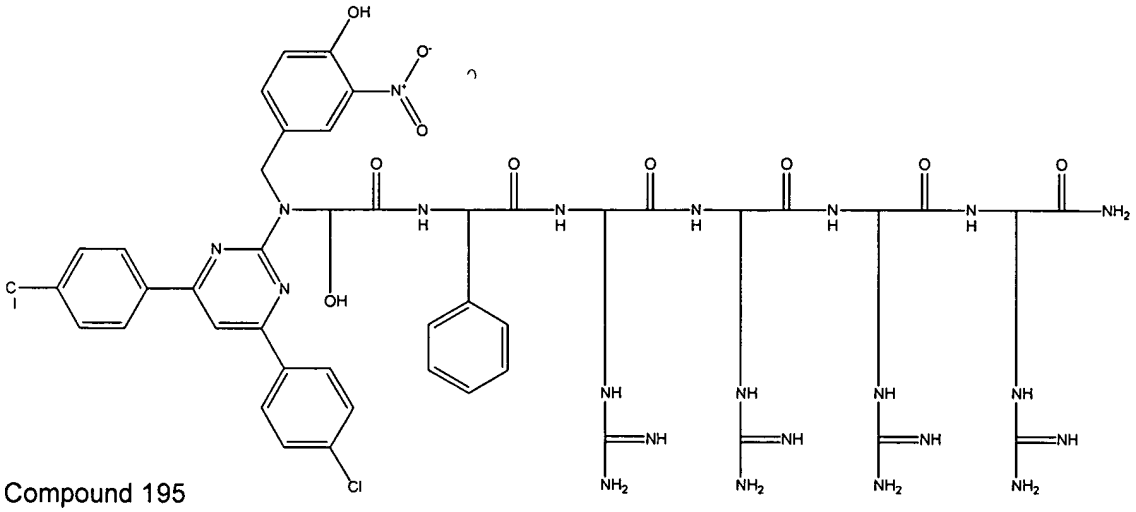
Compound 192



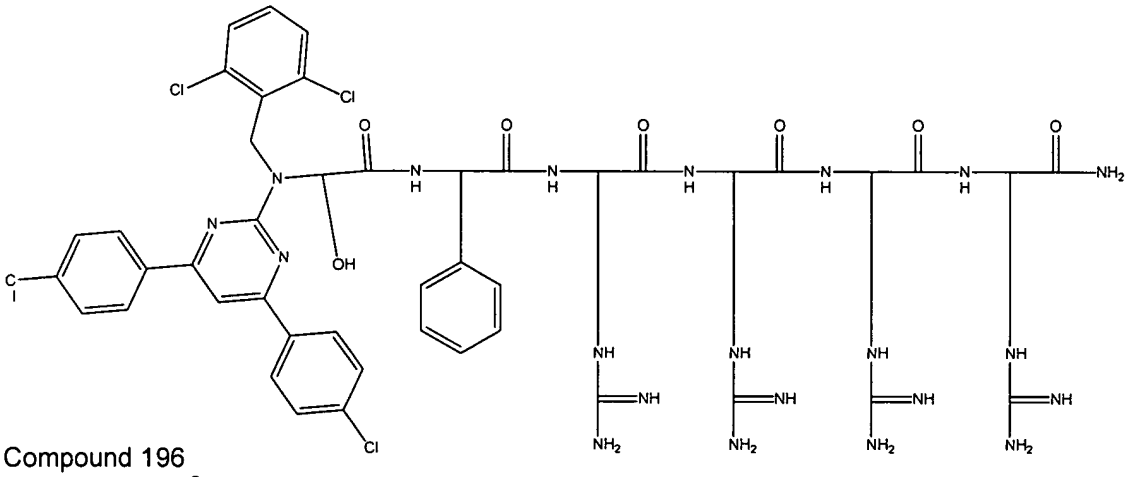
Compound 193



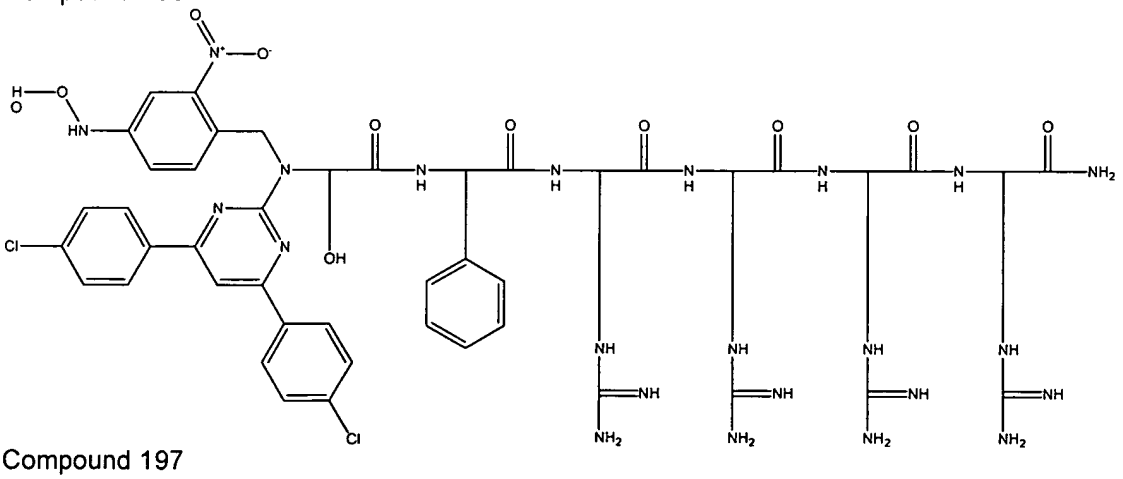
Compound 194



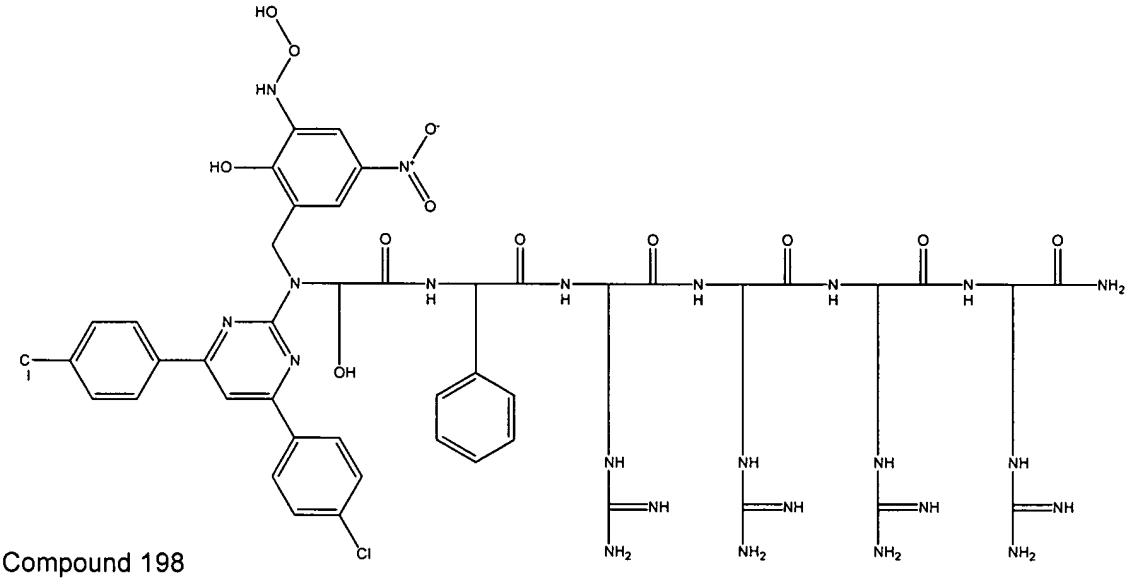
Compound 195



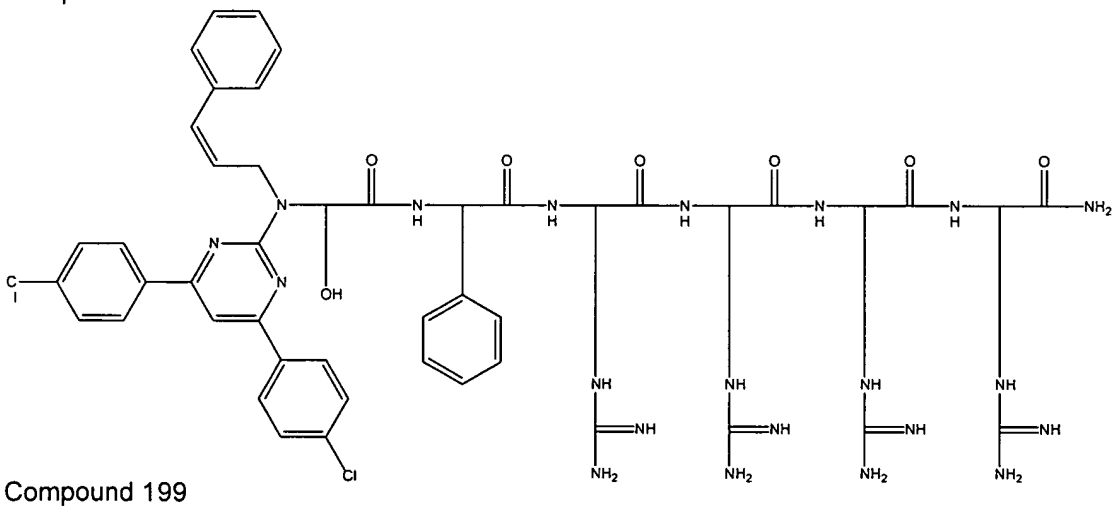
Compound 196



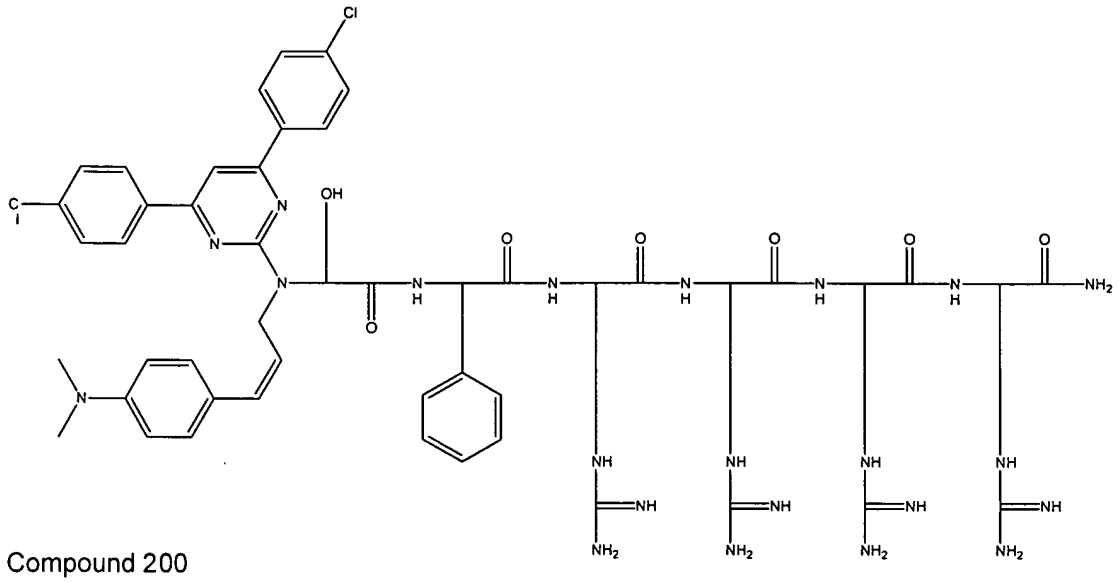
Compound 197



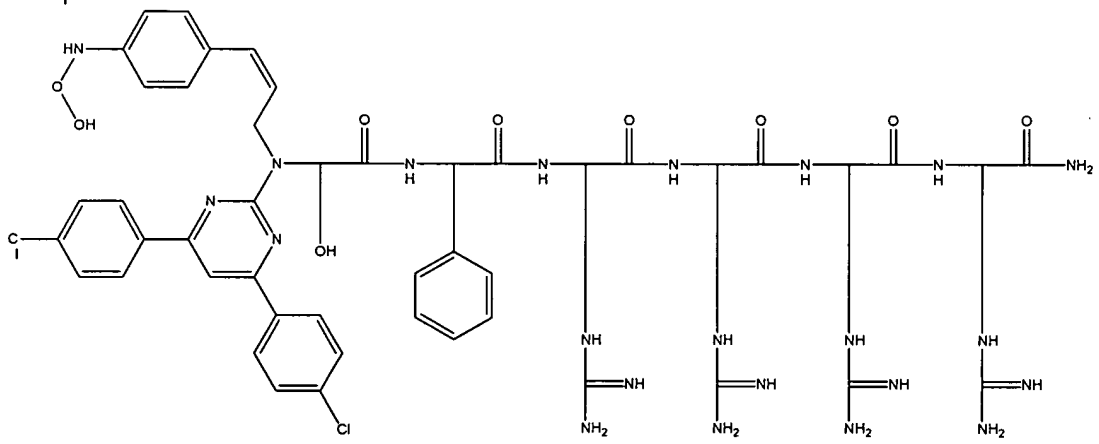
Compound 198



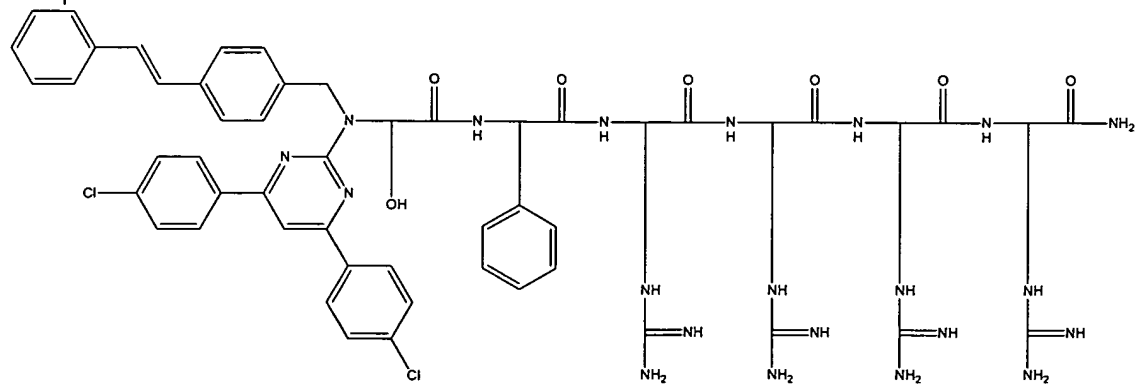
Compound 199



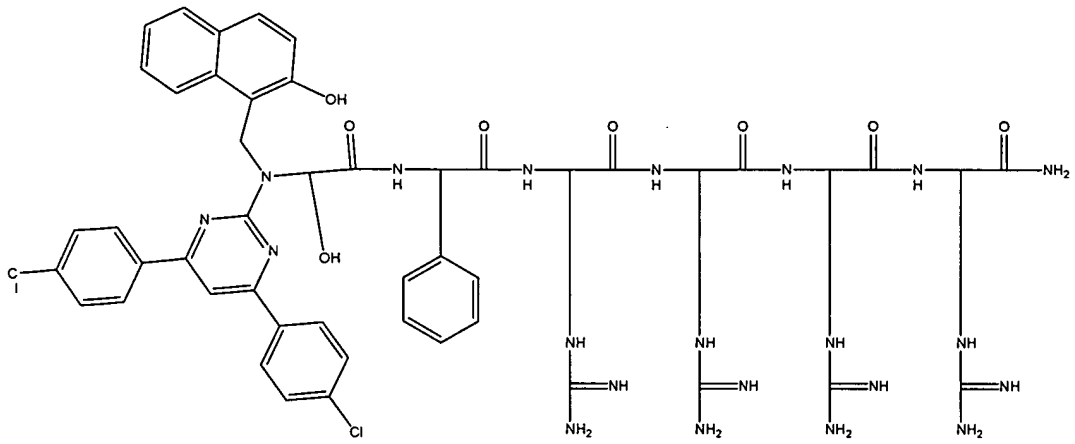
Compound 200



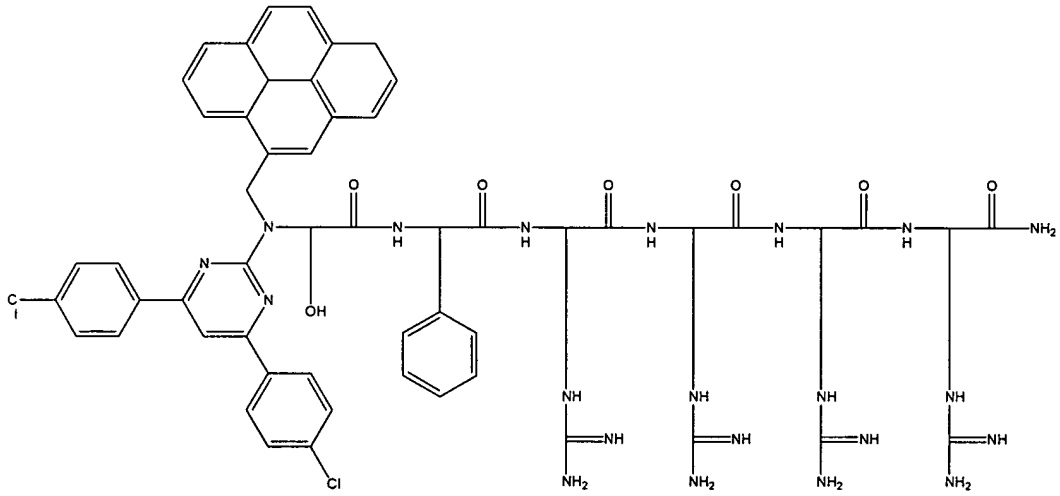
Compound 201



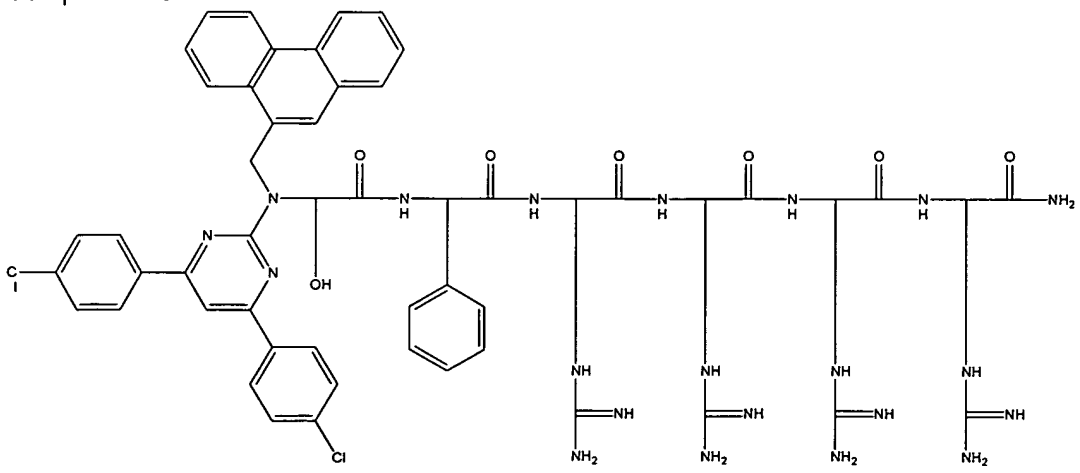
Compound 202



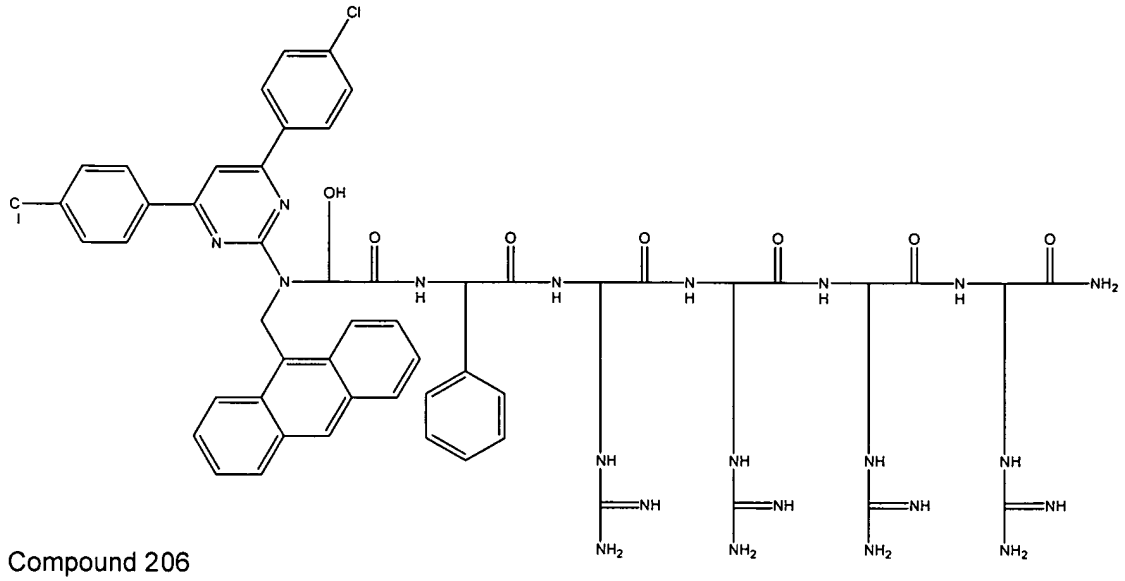
Compound 203



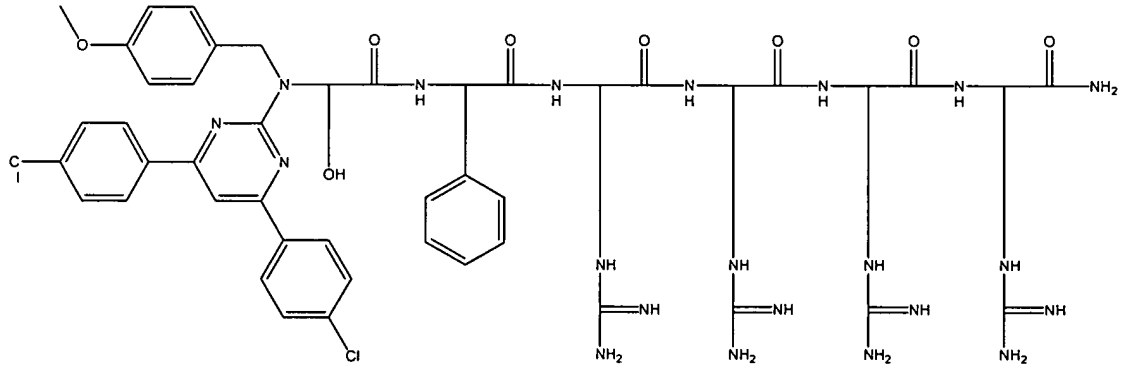
Compound 204



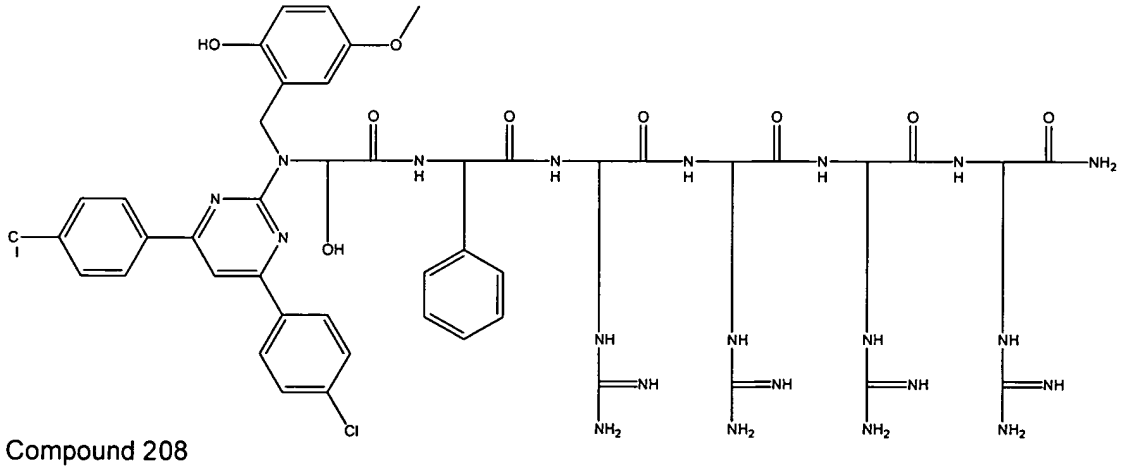
Compound 205



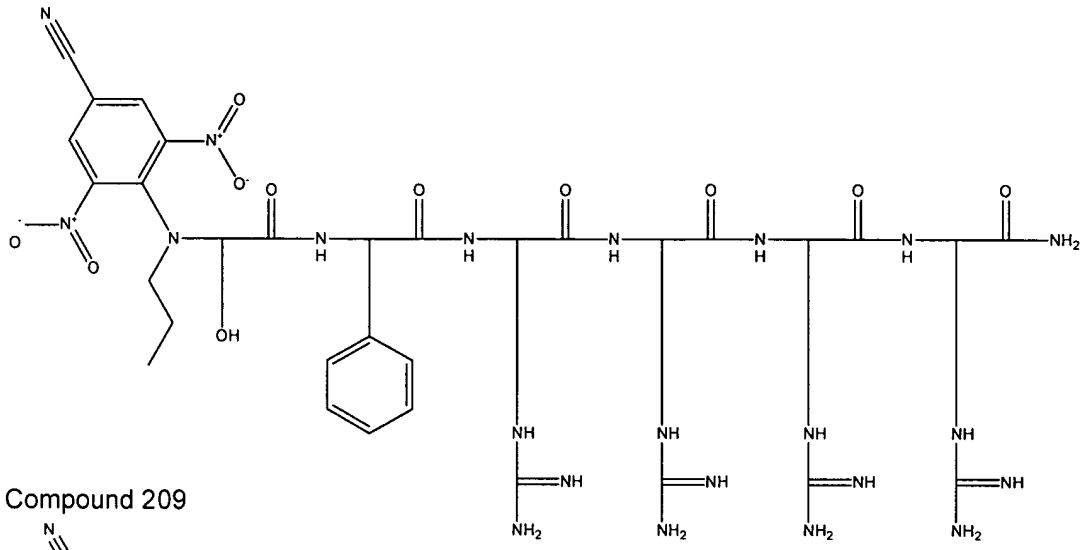
Compound 206



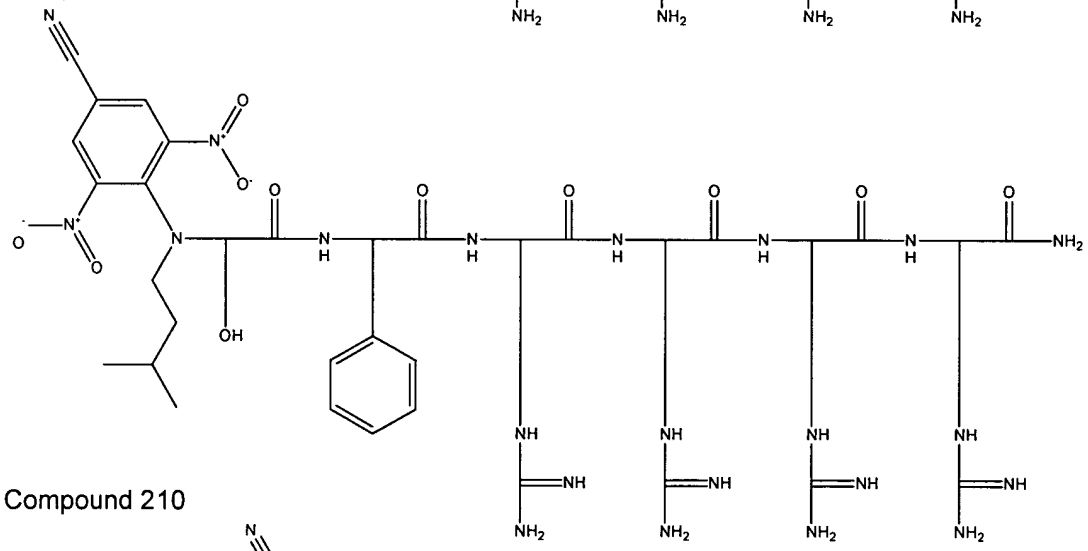
Compound 207



Compound 208

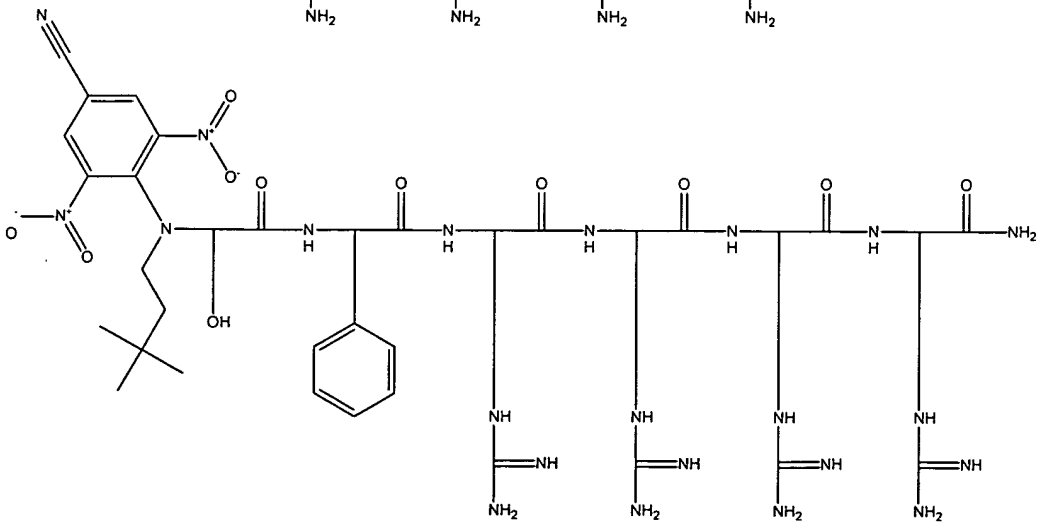


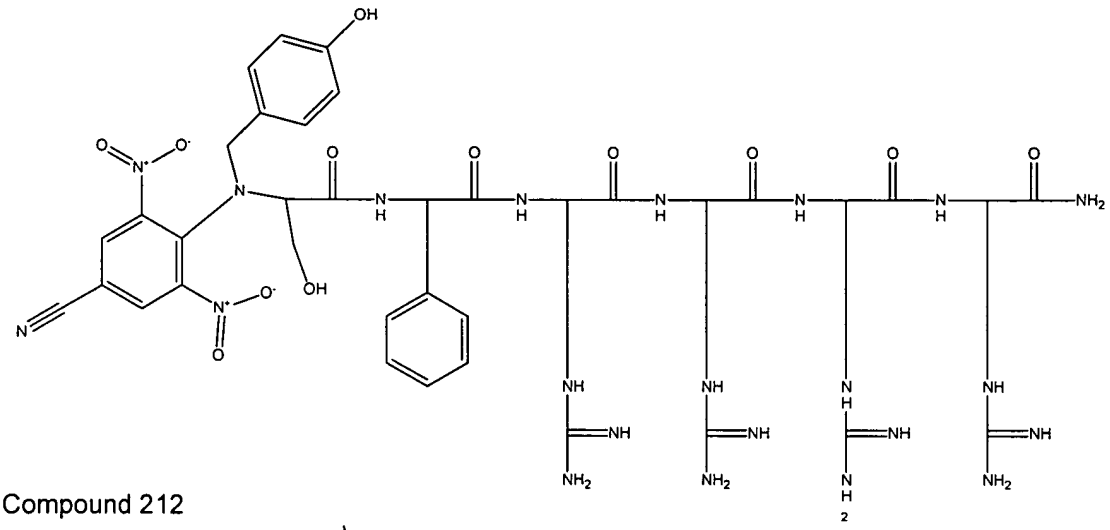
Compound 209



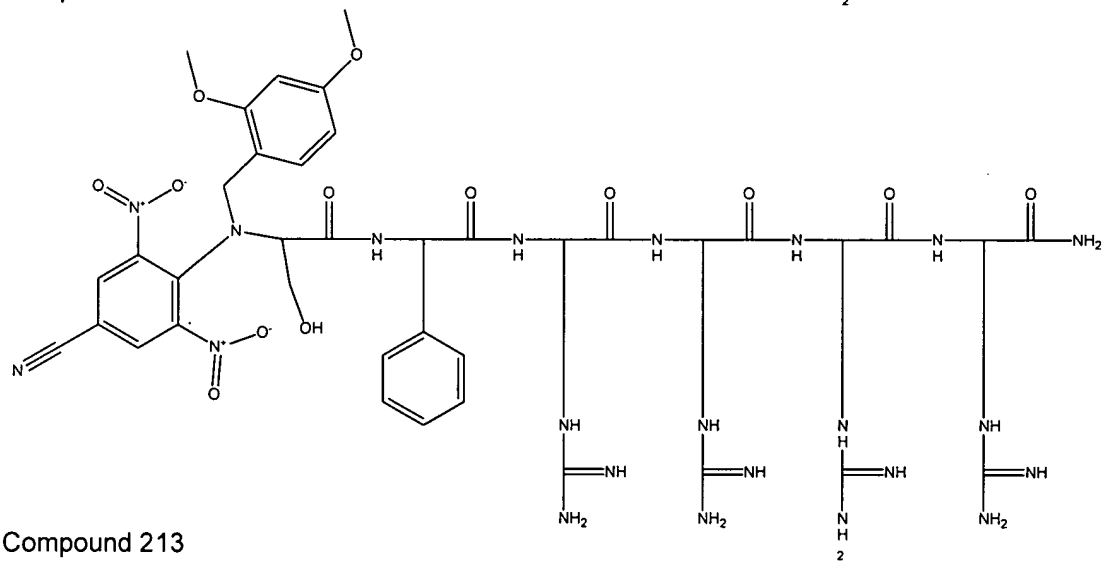
Compound 210

Compound 211

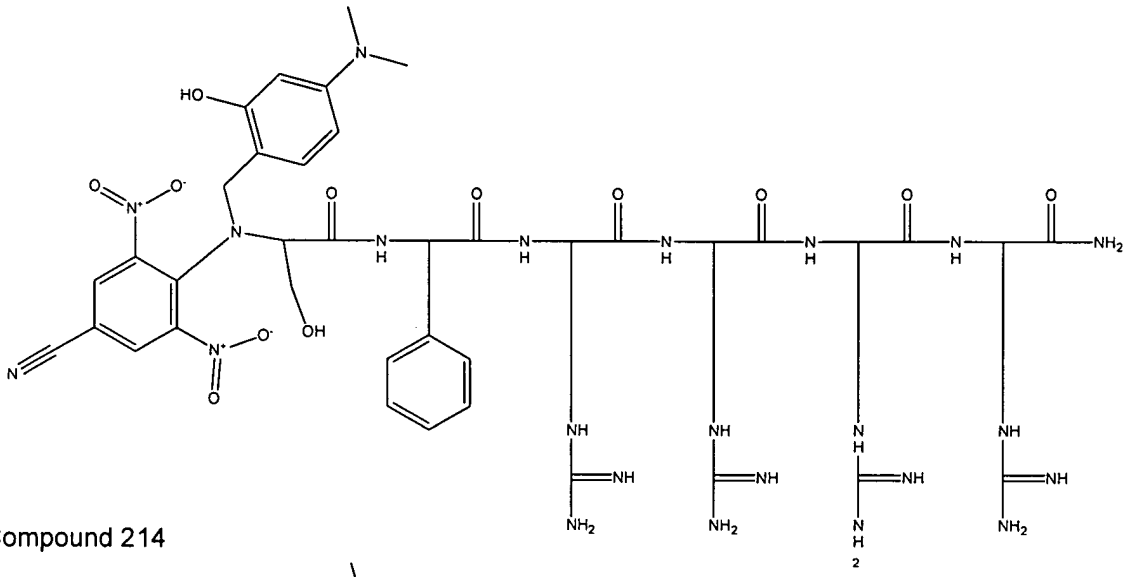




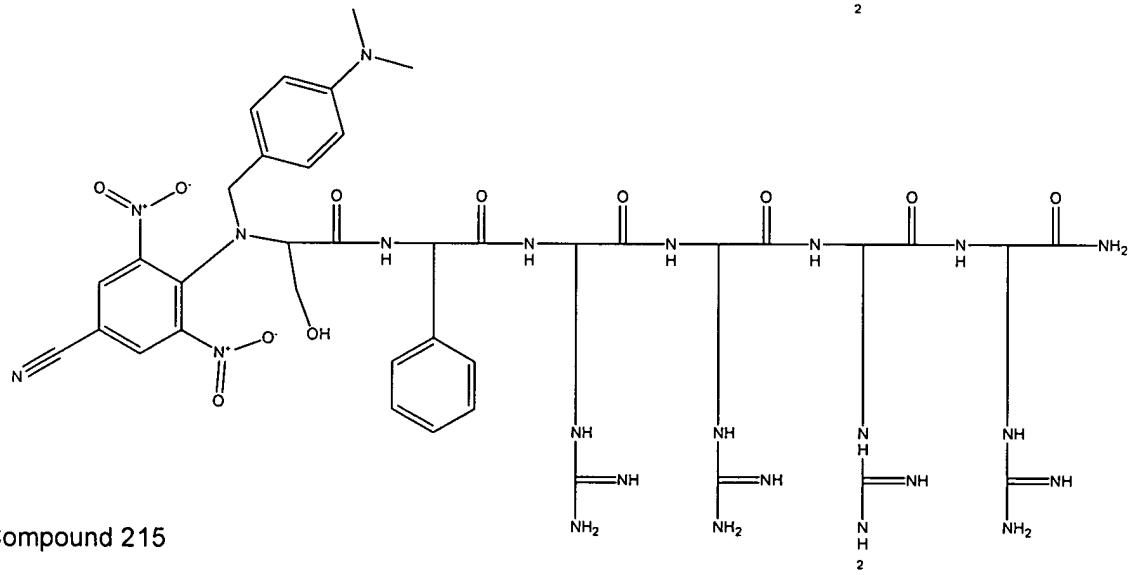
Compound 212



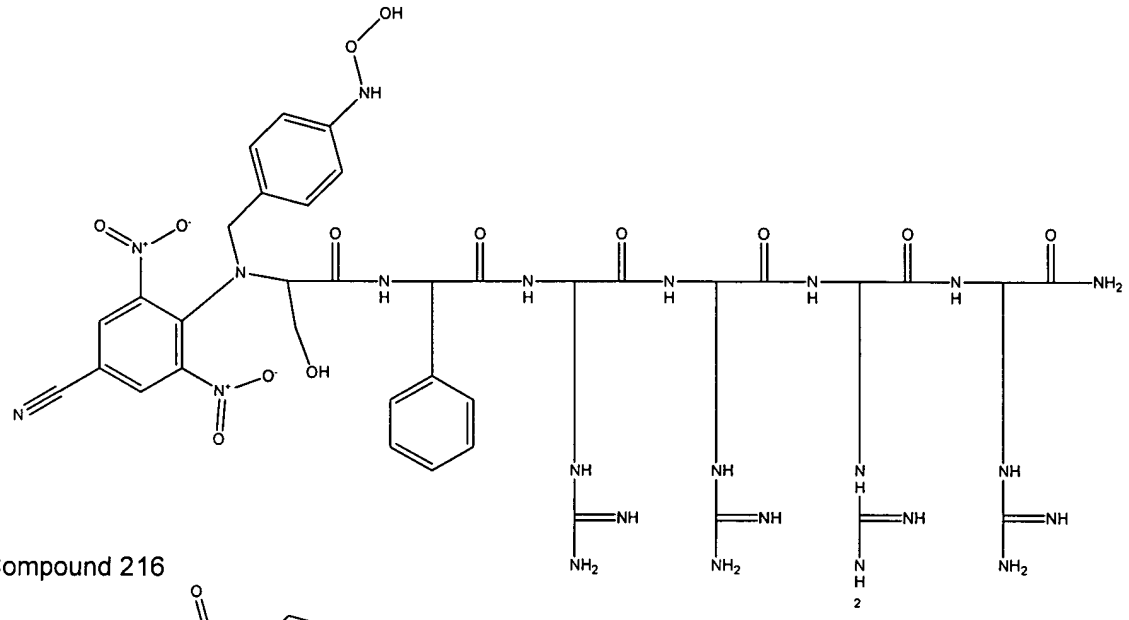
Compound 213



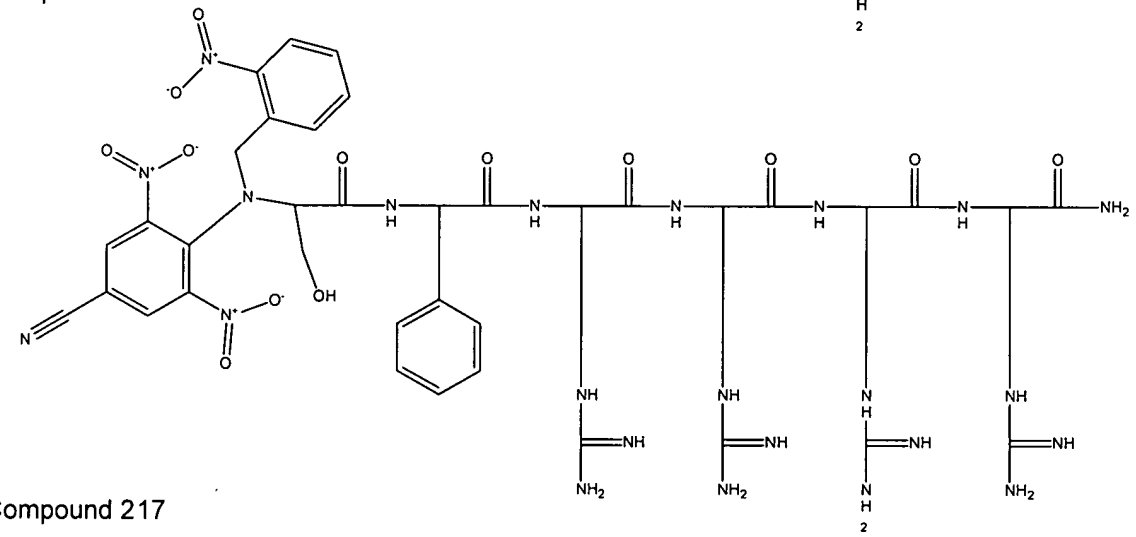
Compound 214



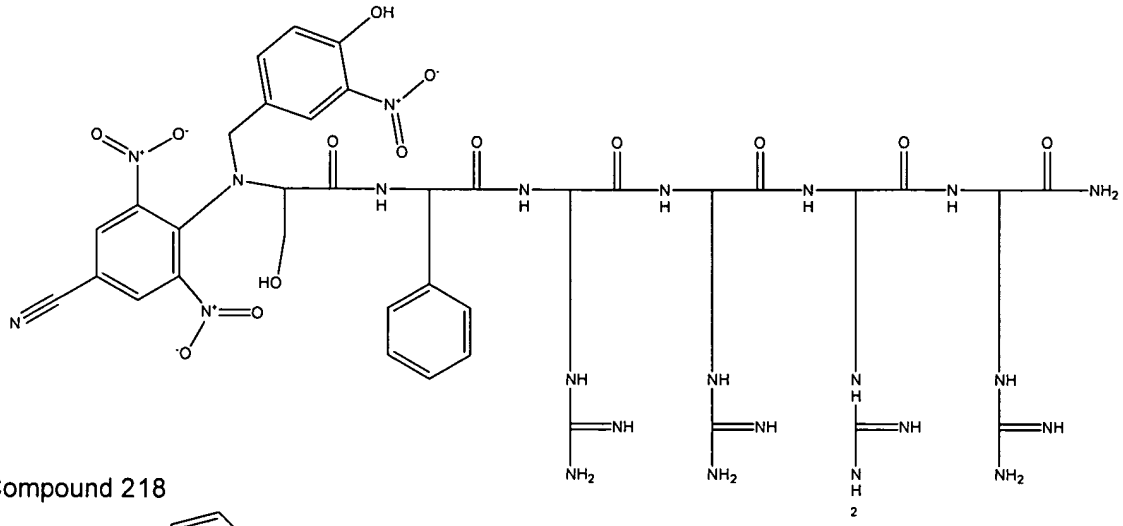
Compound 215



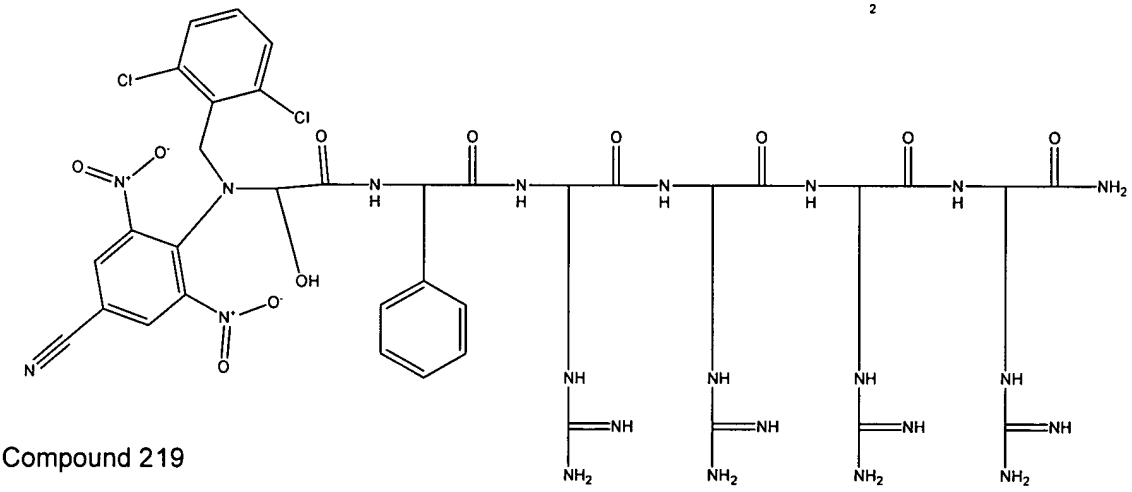
Compound 216



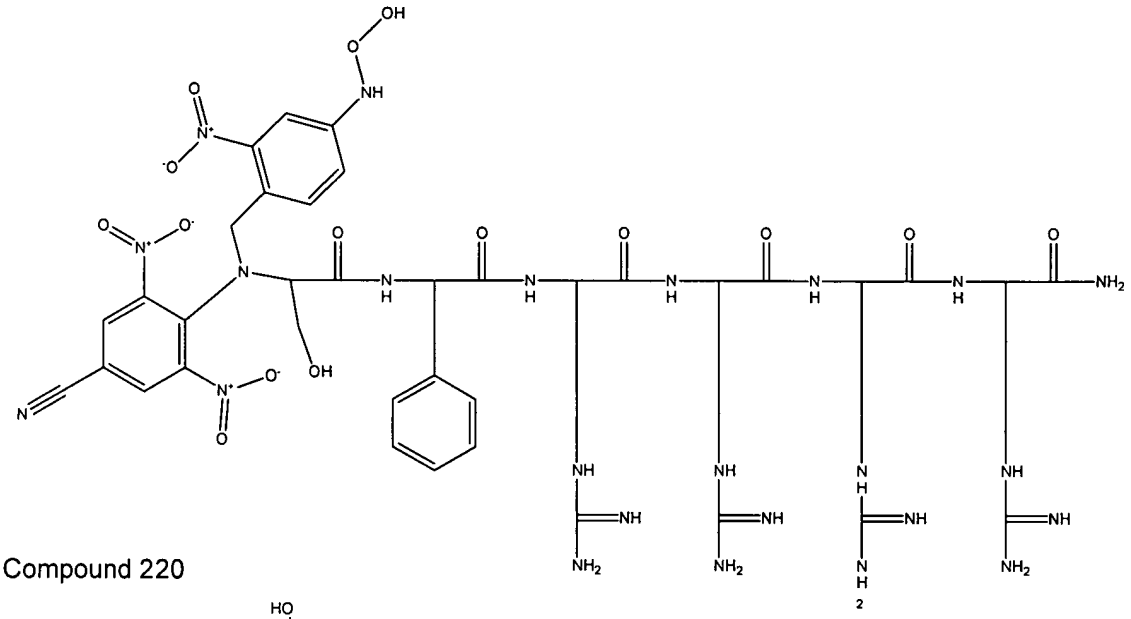
Compound 217



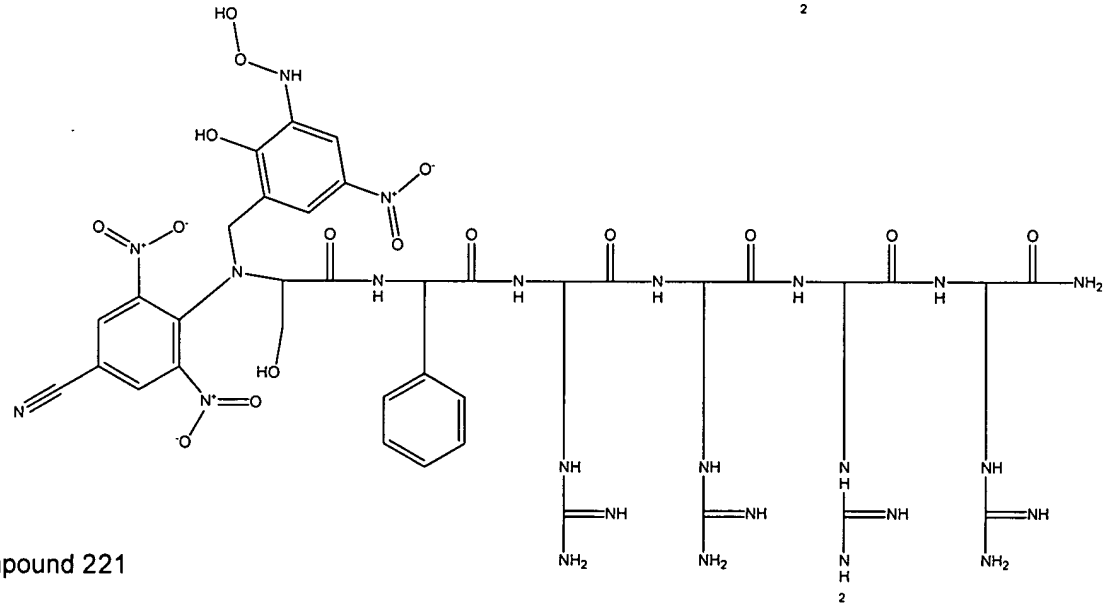
Compound 218



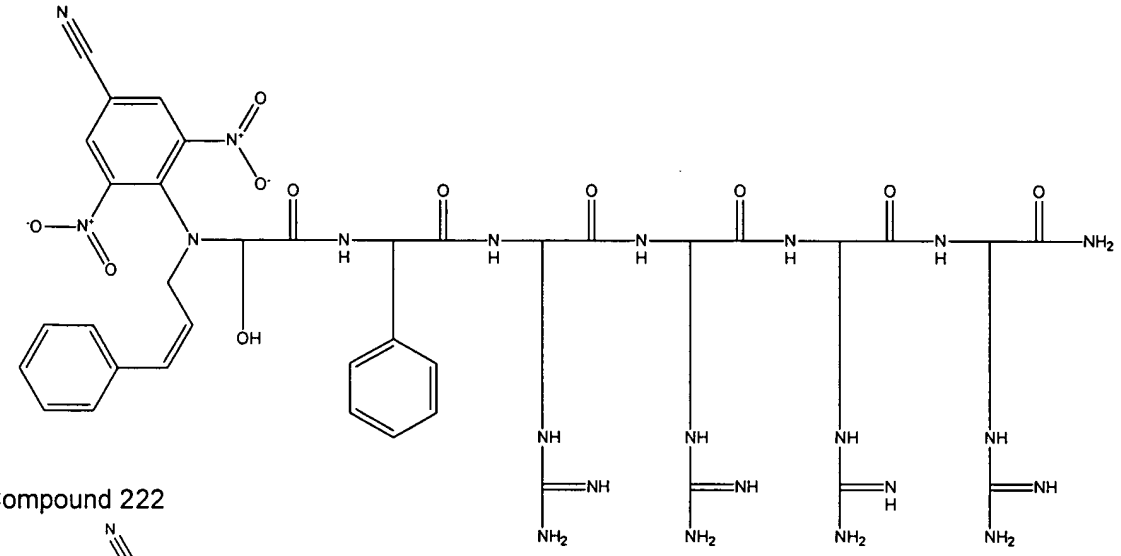
Compound 219



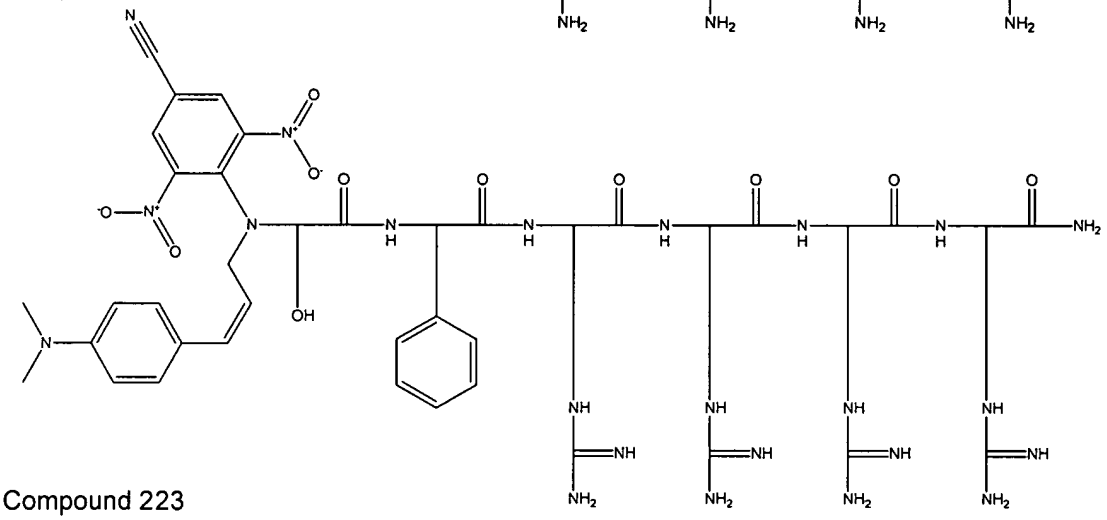
Compound 220



Compound 221

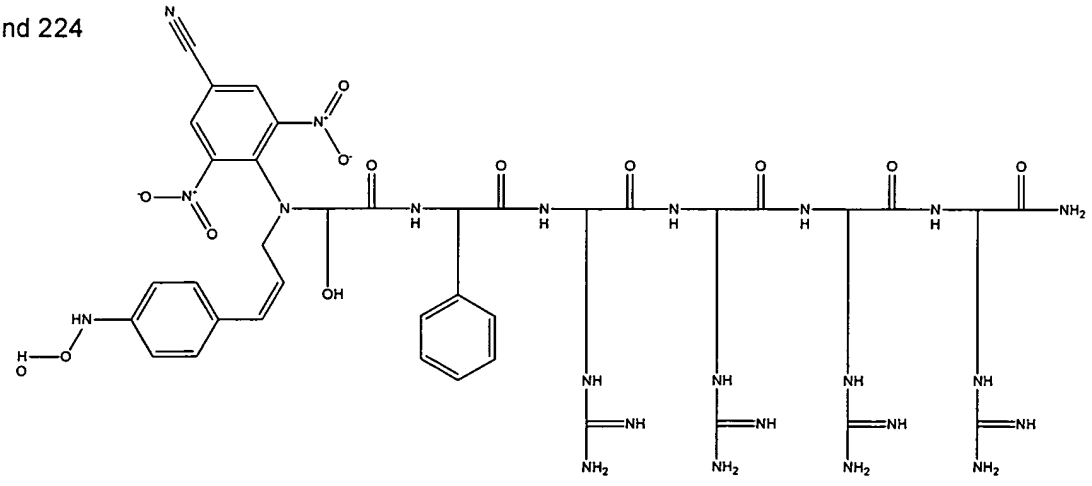


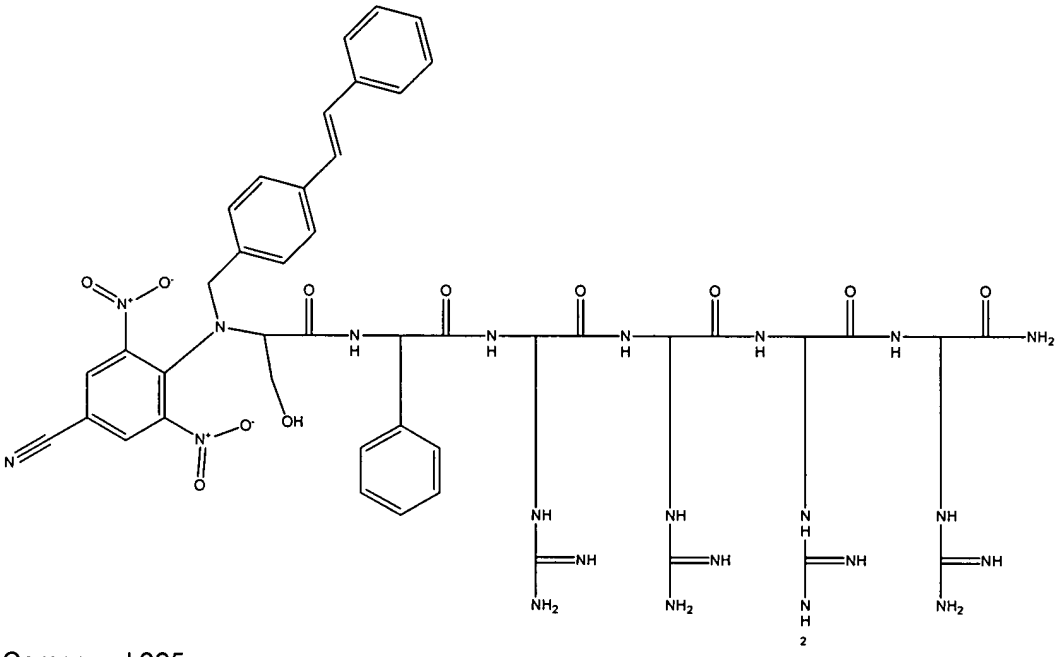
Compound 222



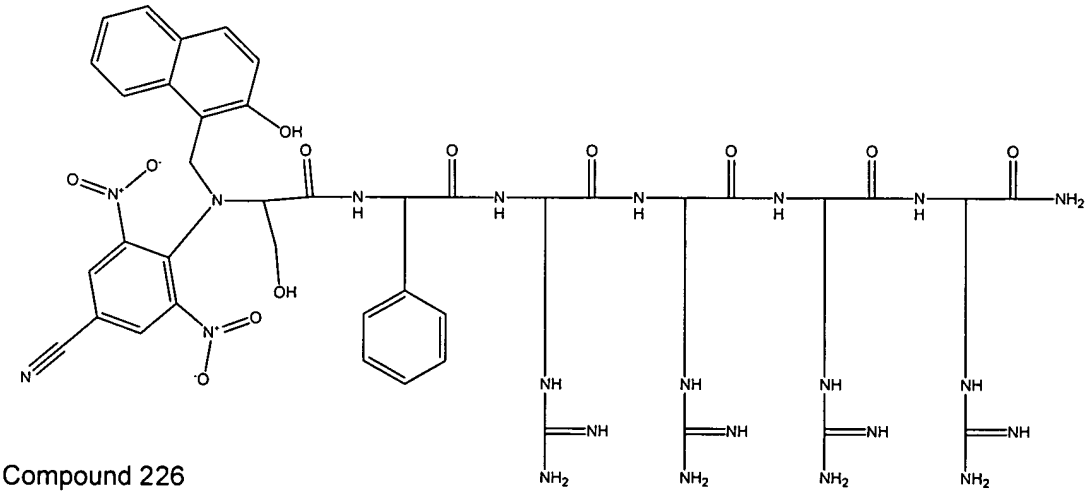
Compound 223

Compound 224

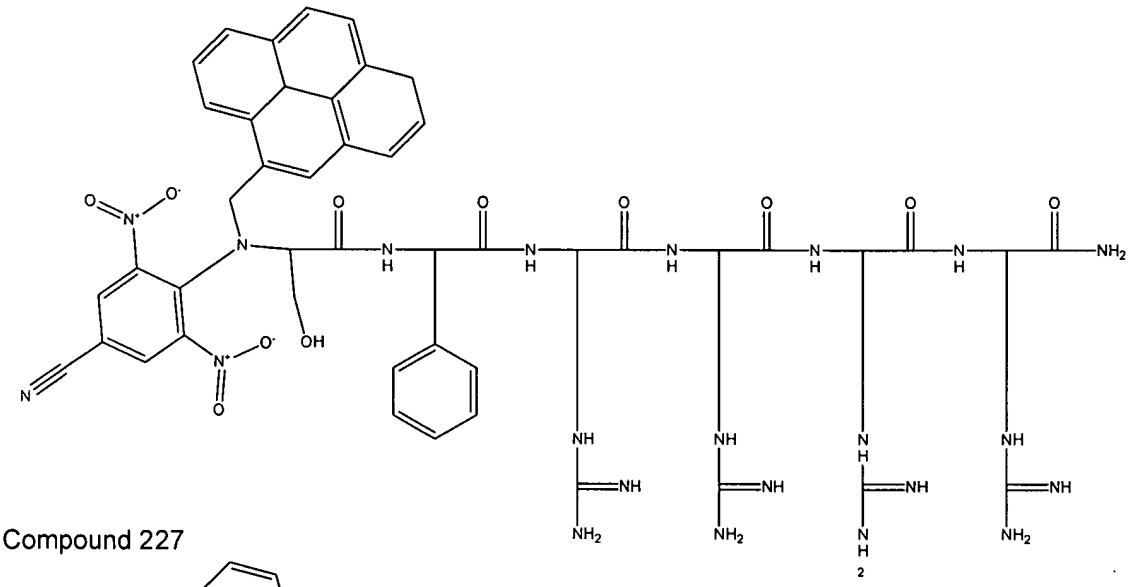




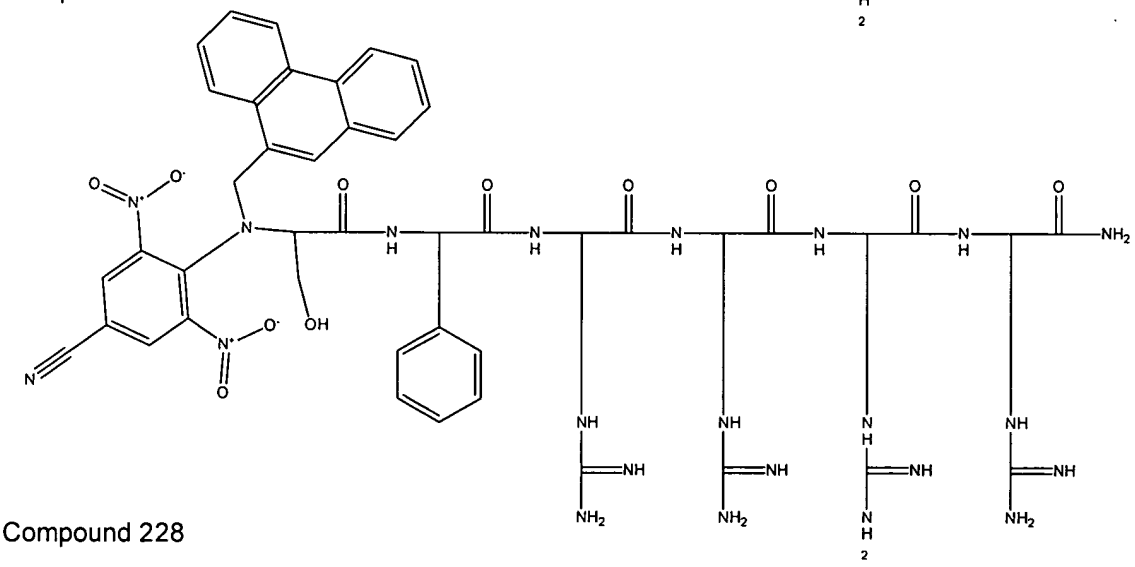
Compound 225



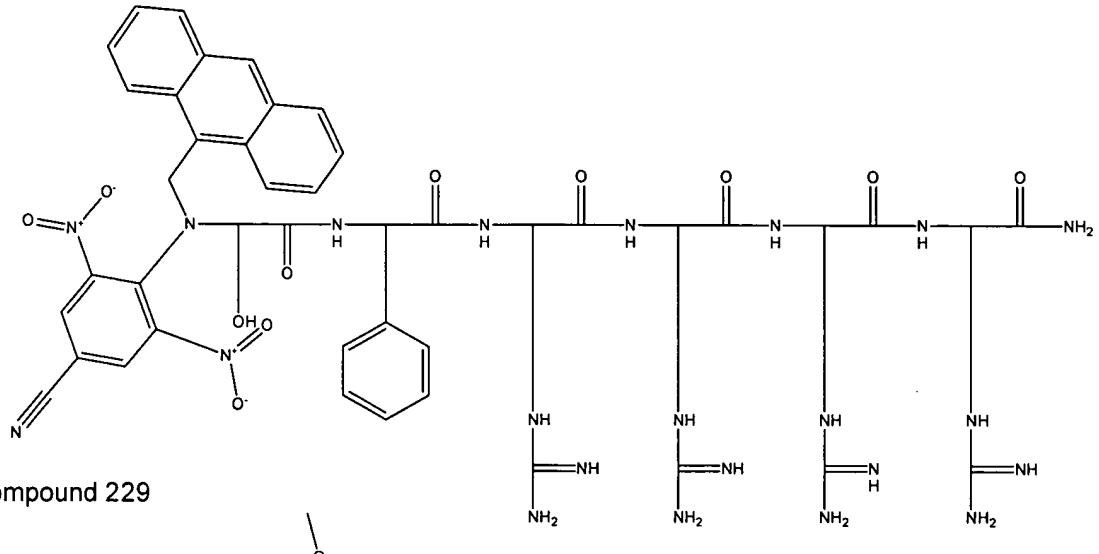
Compound 226



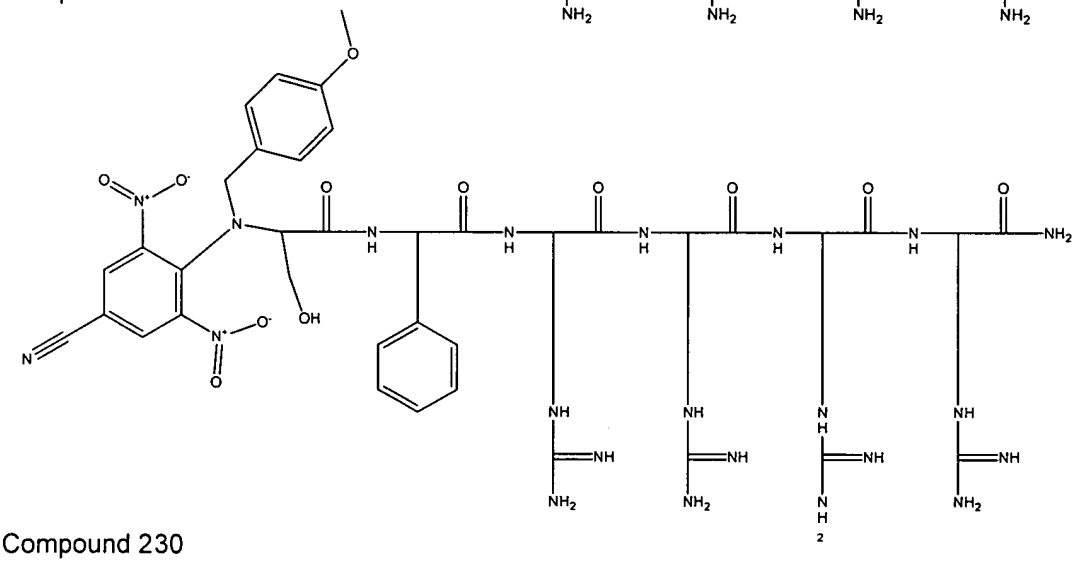
Compound 227



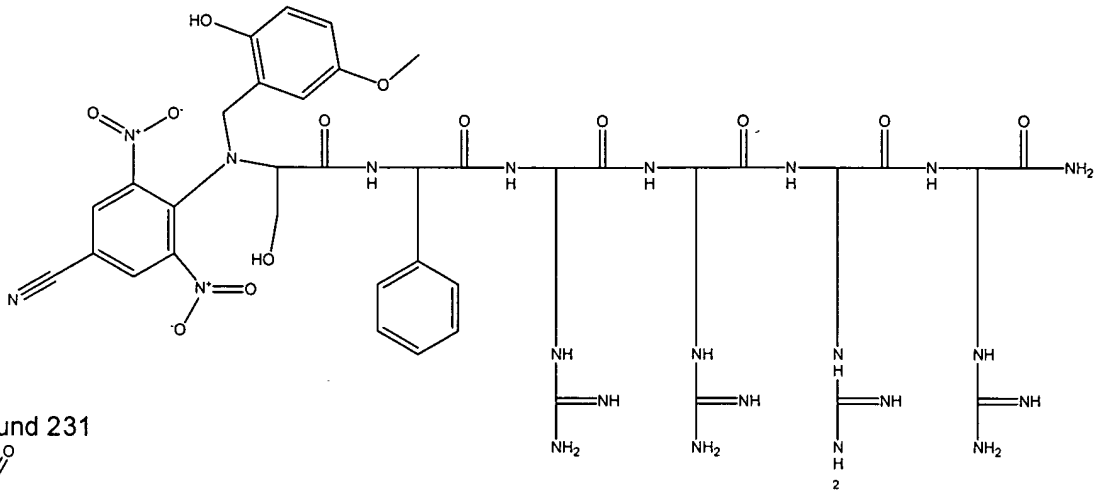
Compound 228



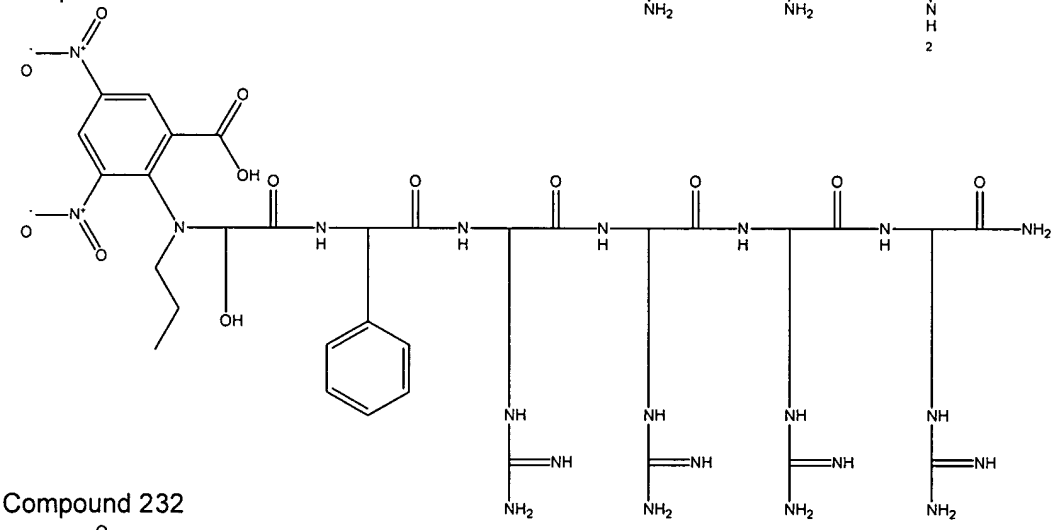
Compound 229



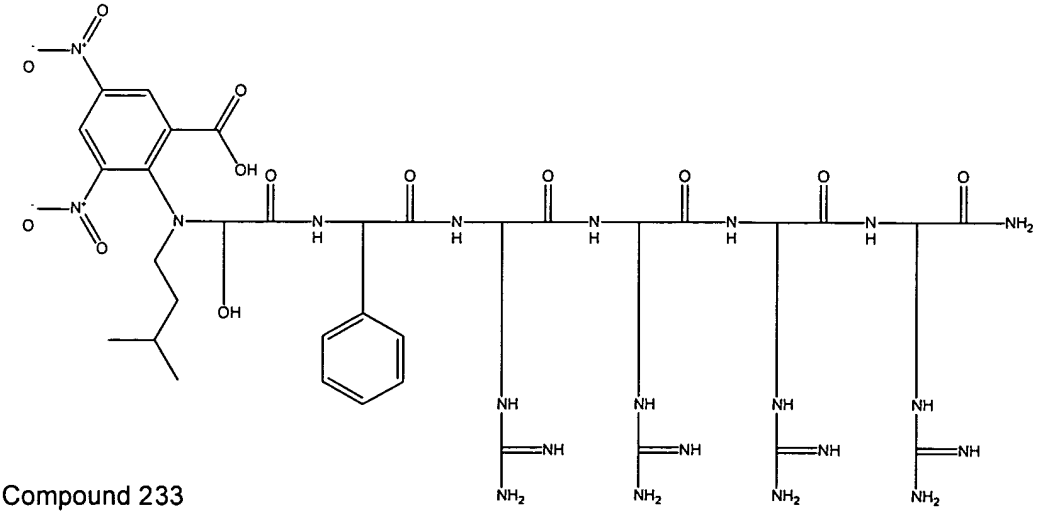
Compound 230



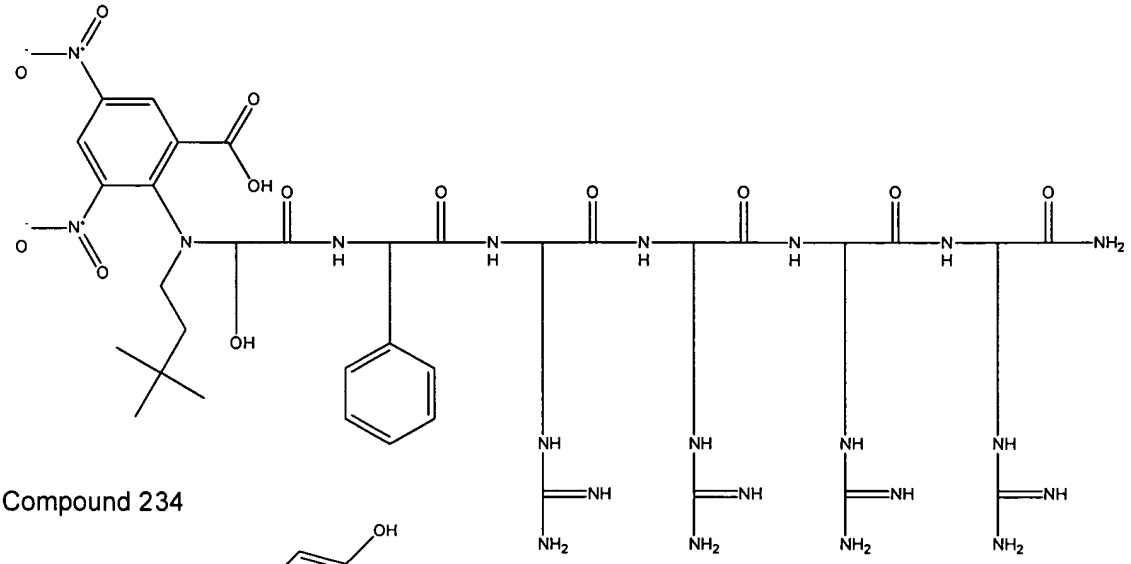
Compound 231



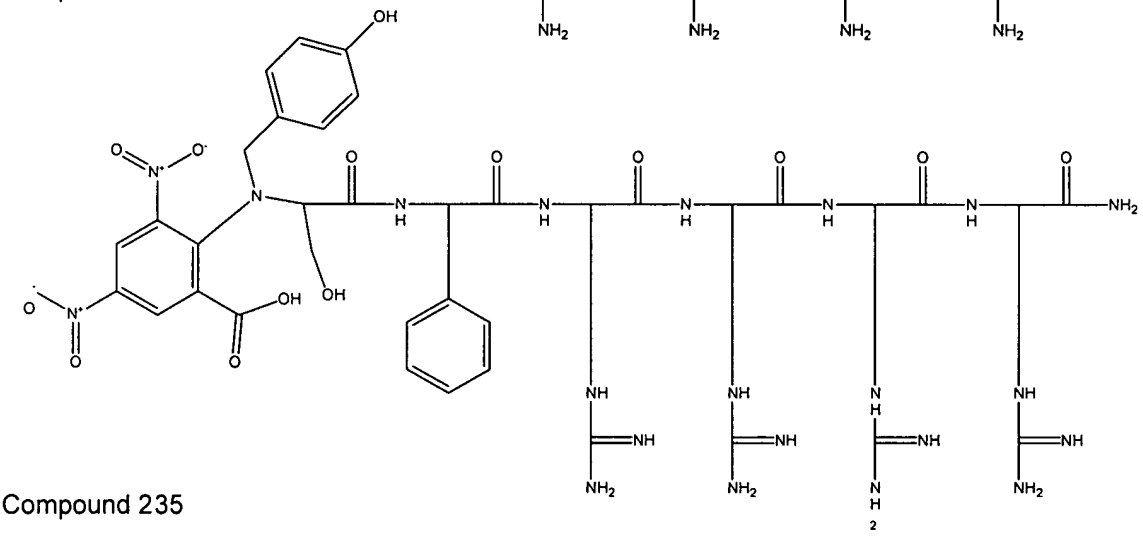
Compound 232



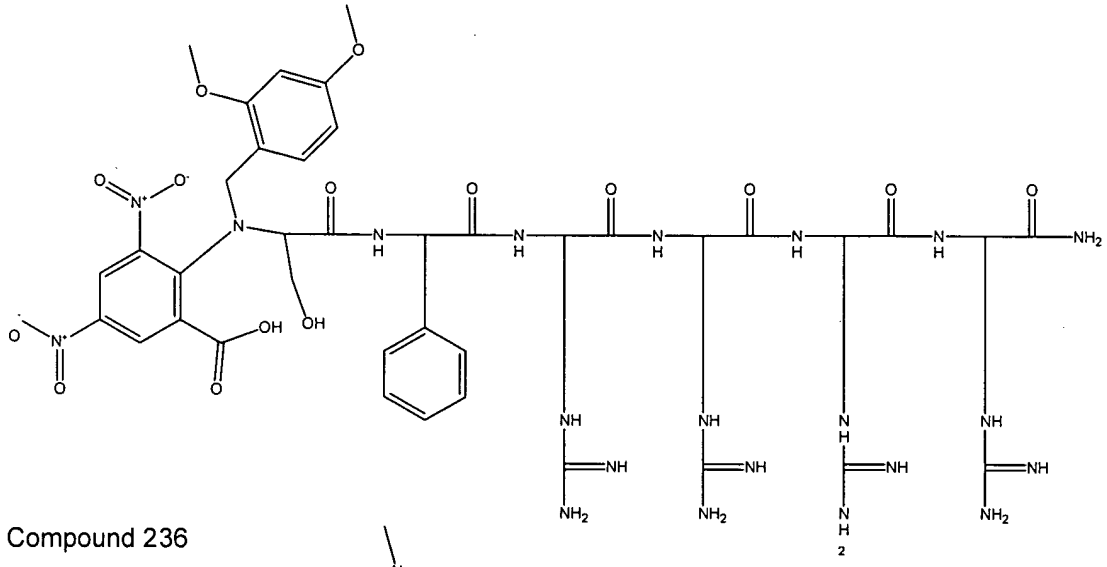
Compound 233



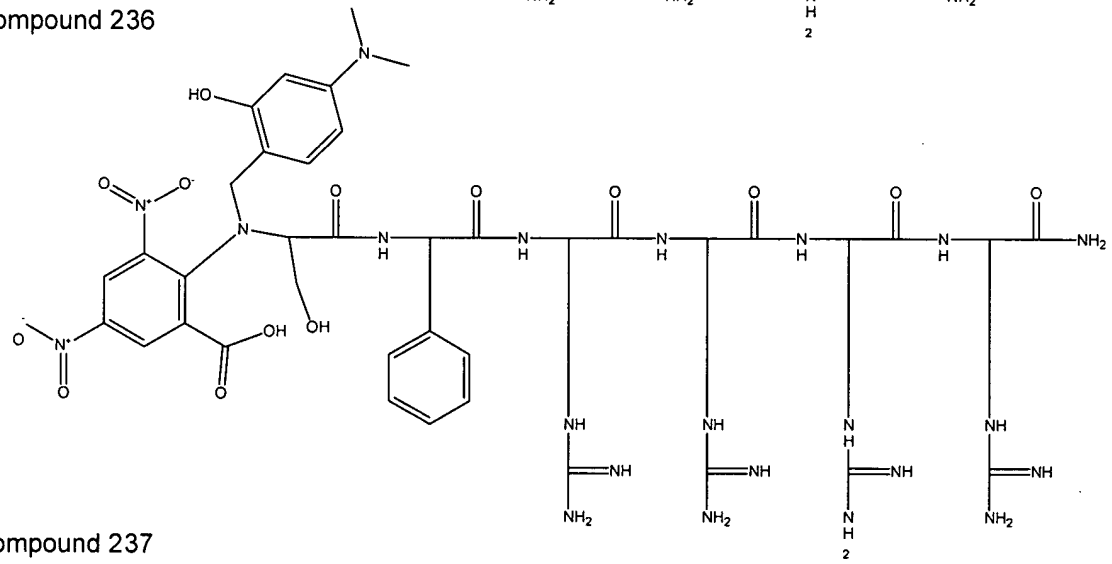
Compound 234



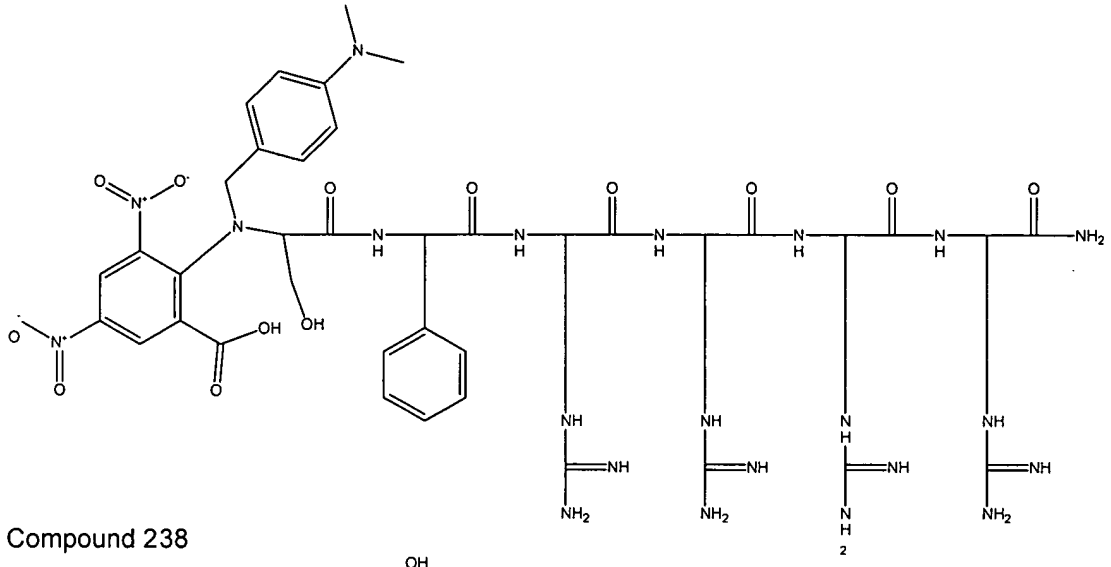
Compound 235



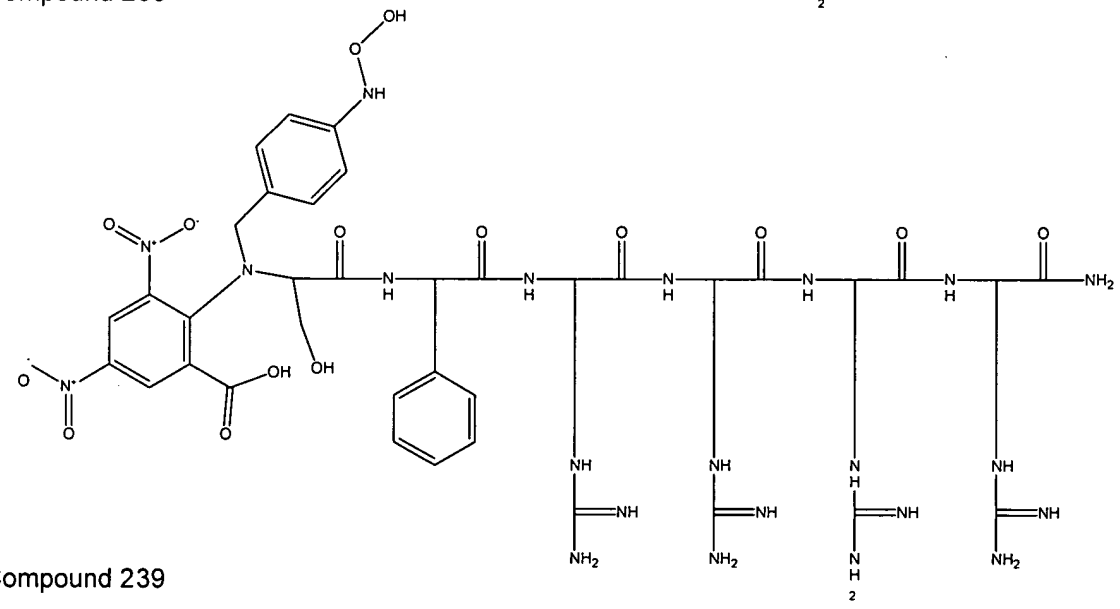
Compound 236



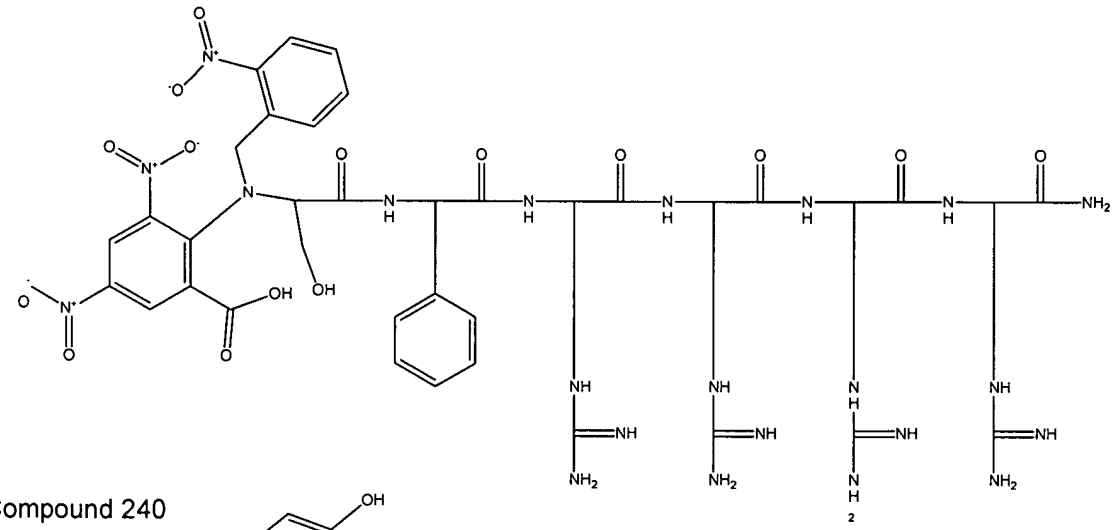
Compound 237



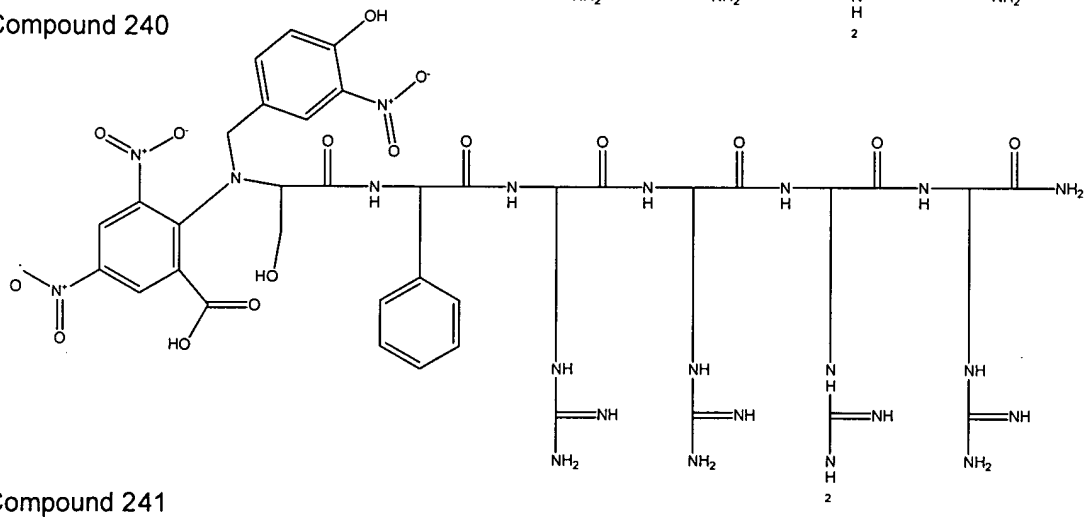
Compound 238



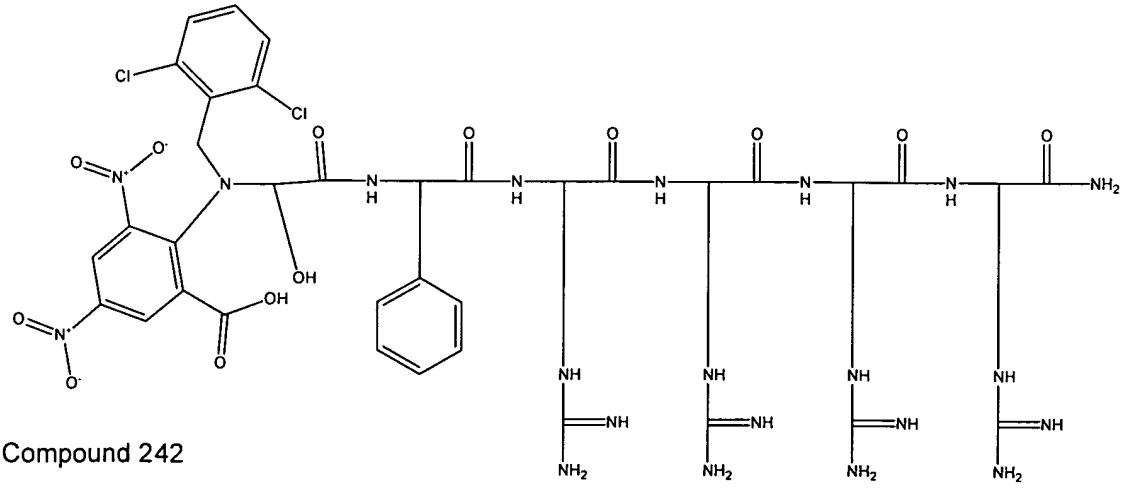
Compound 239



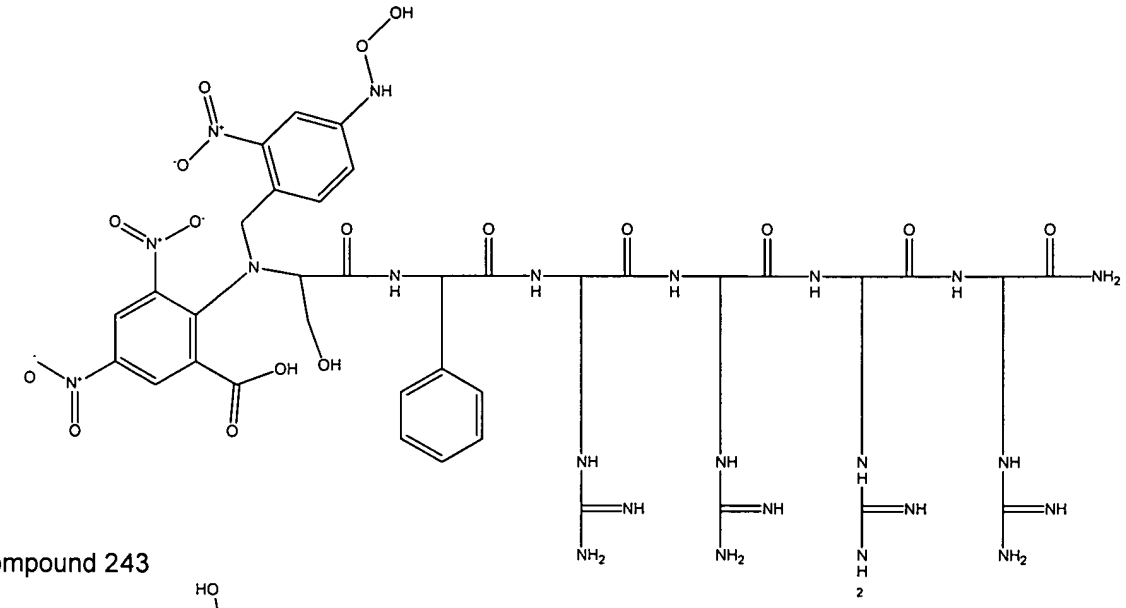
Compound 240



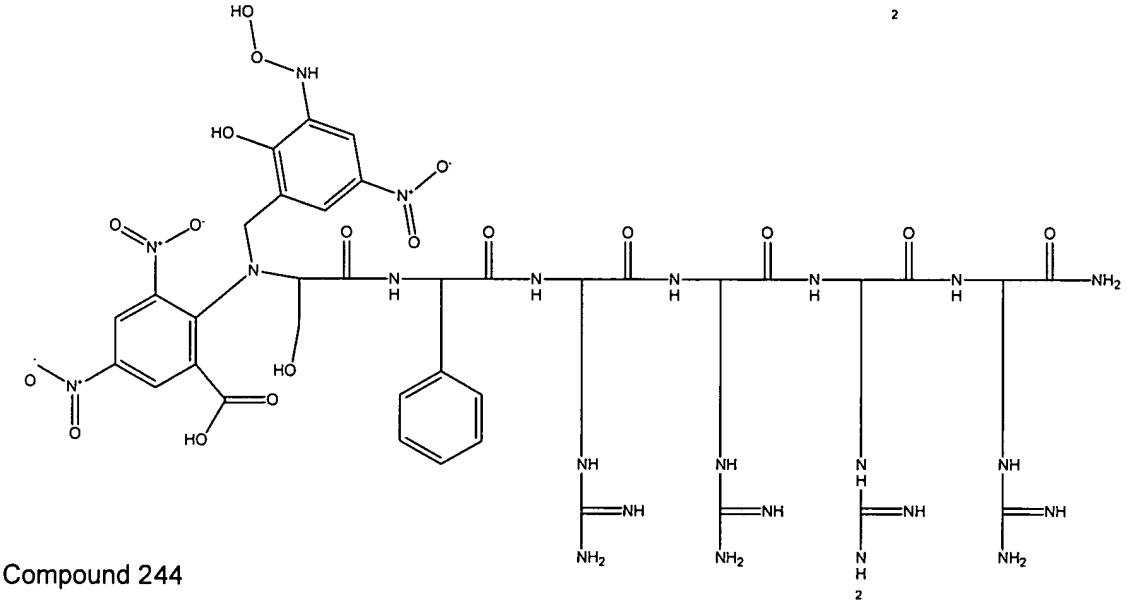
Compound 241



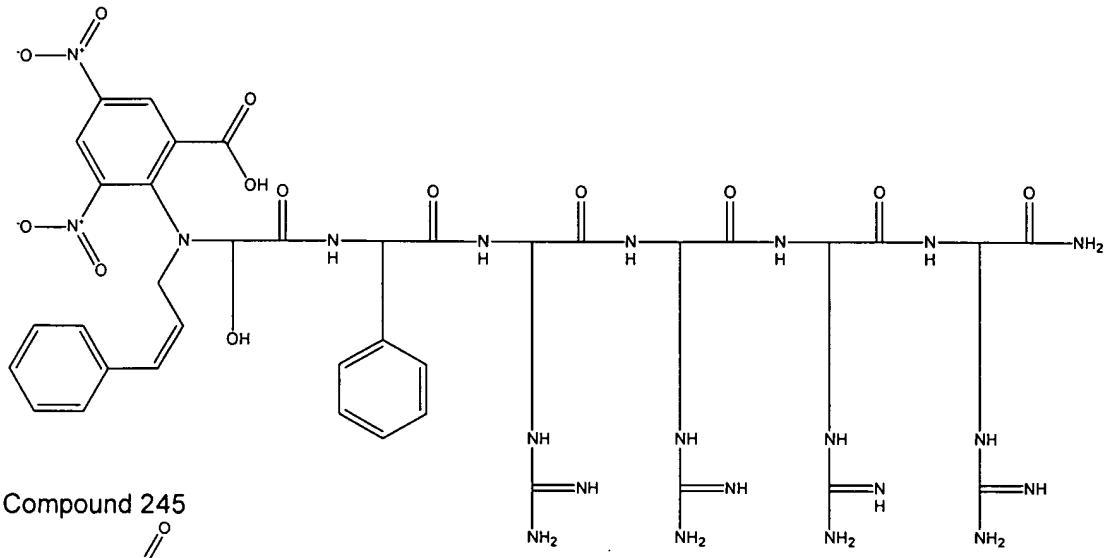
Compound 242



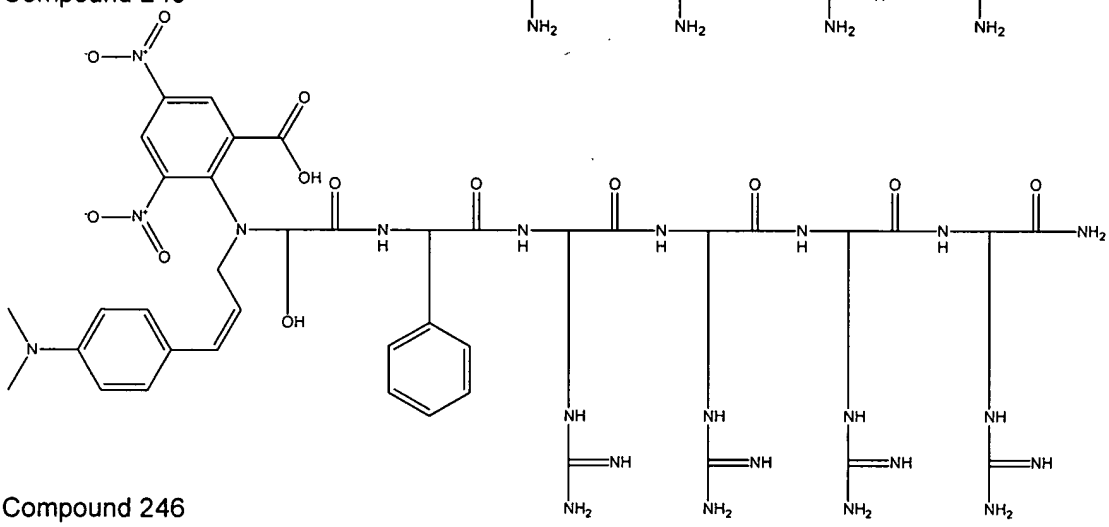
Compound 243



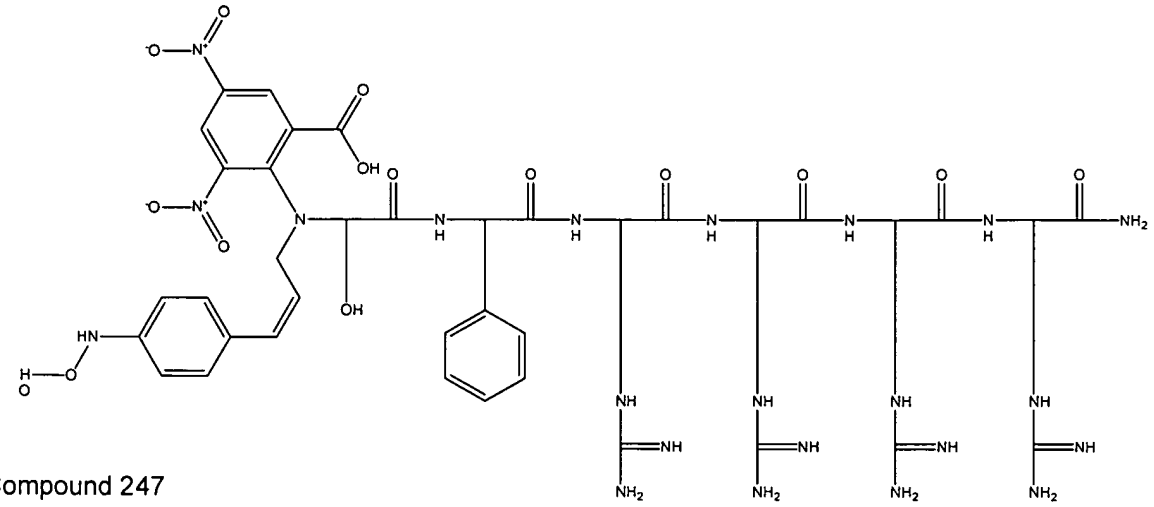
Compound 244



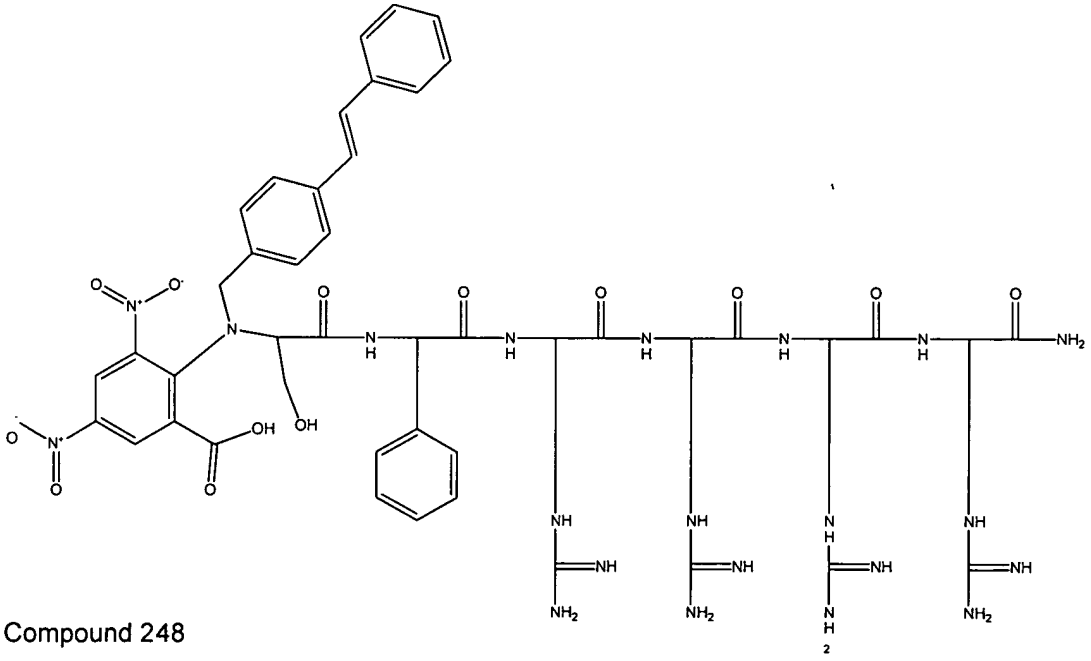
Compound 245



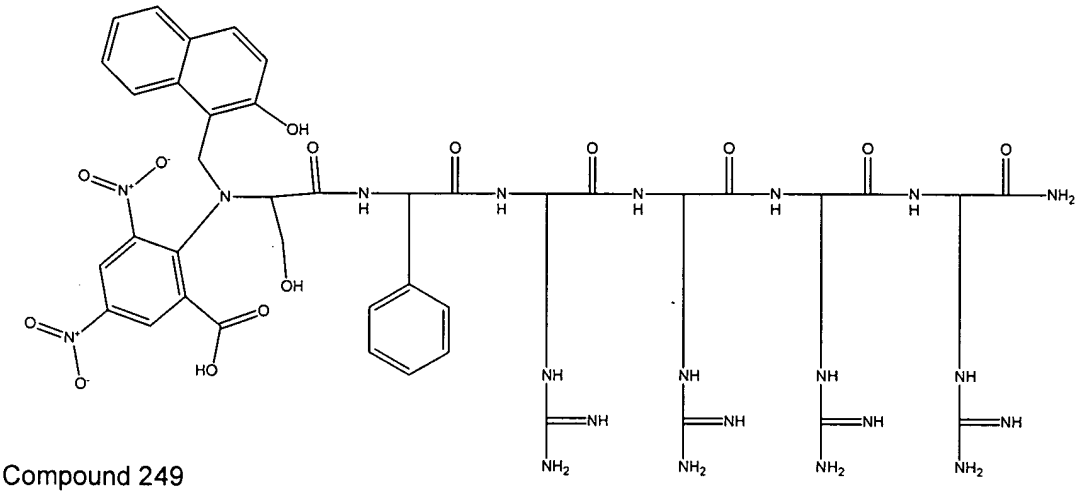
Compound 246



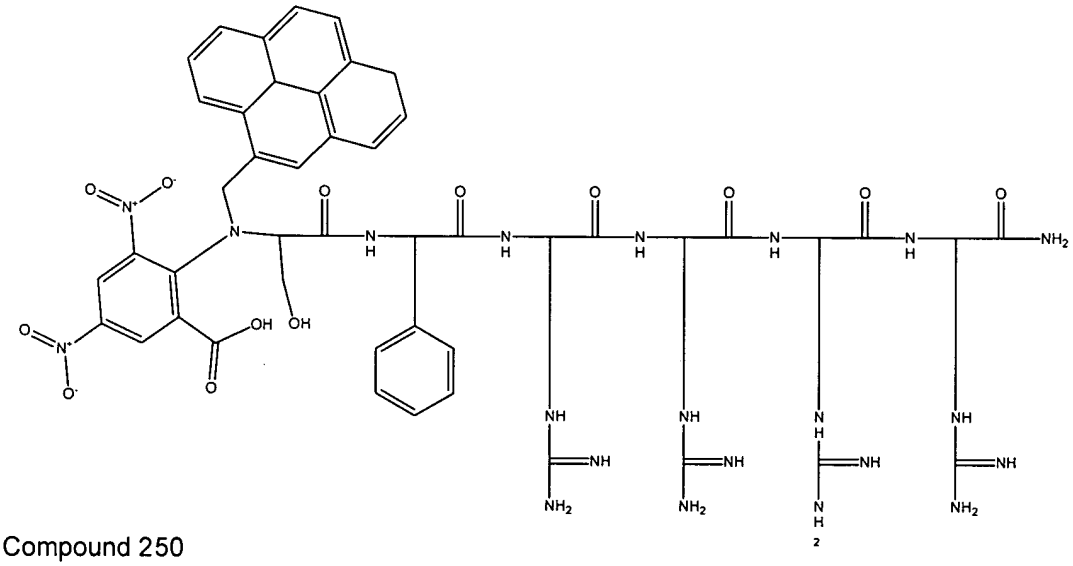
Compound 247



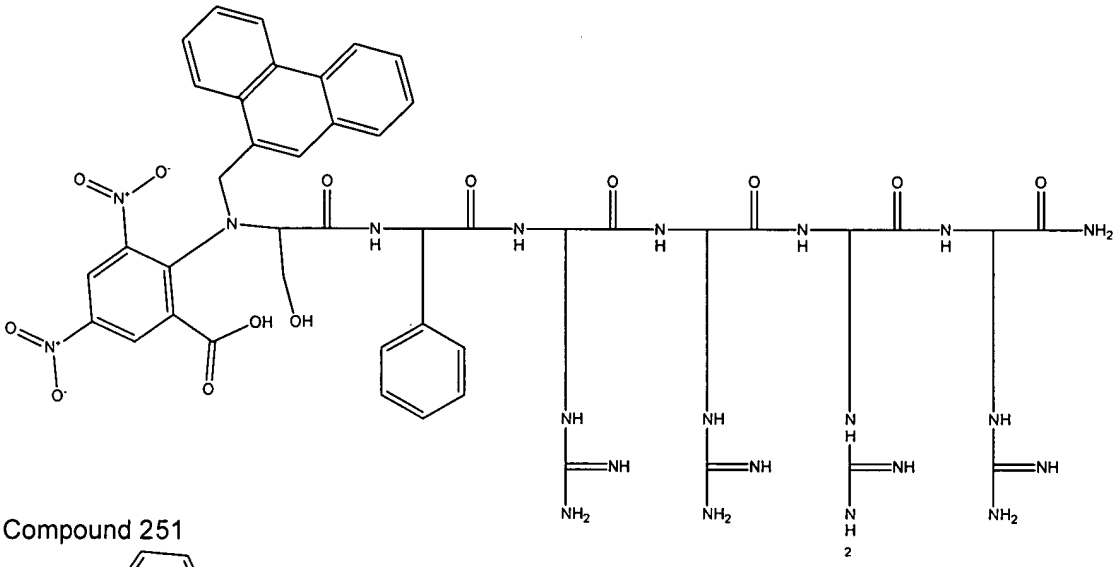
Compound 248



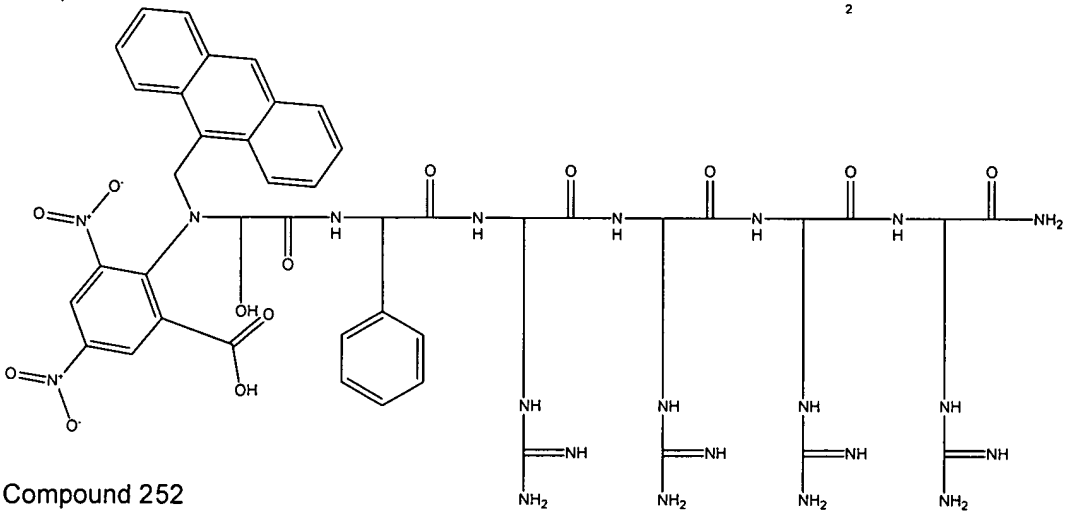
Compound 249



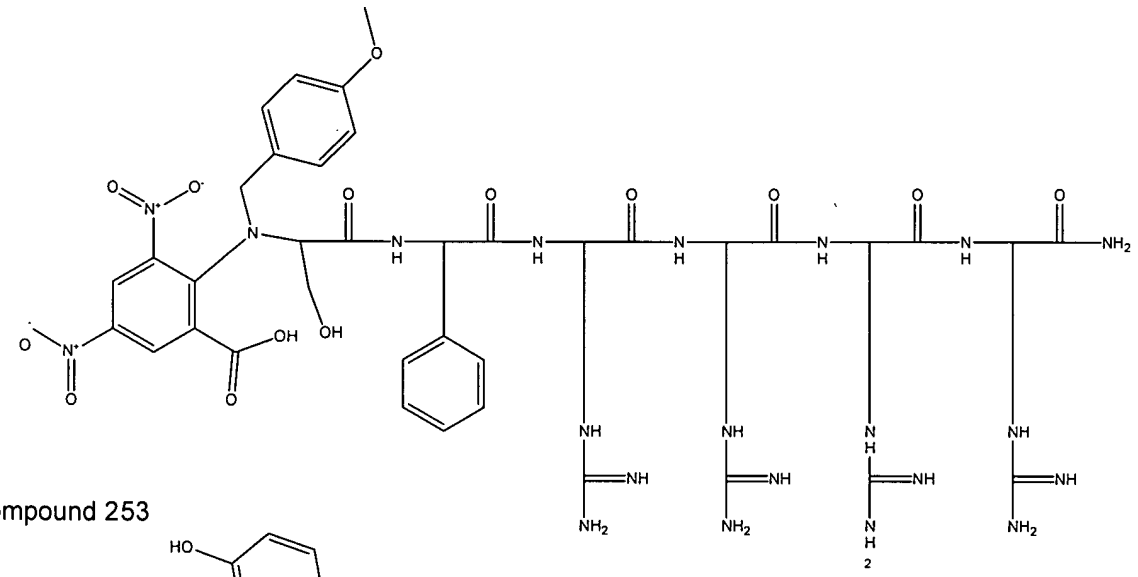
Compound 250



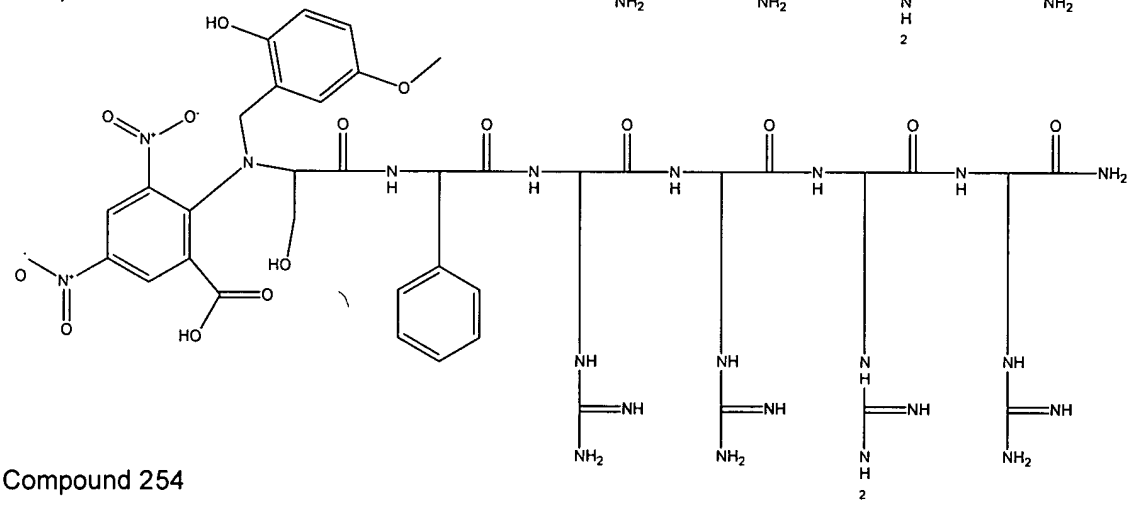
Compound 251



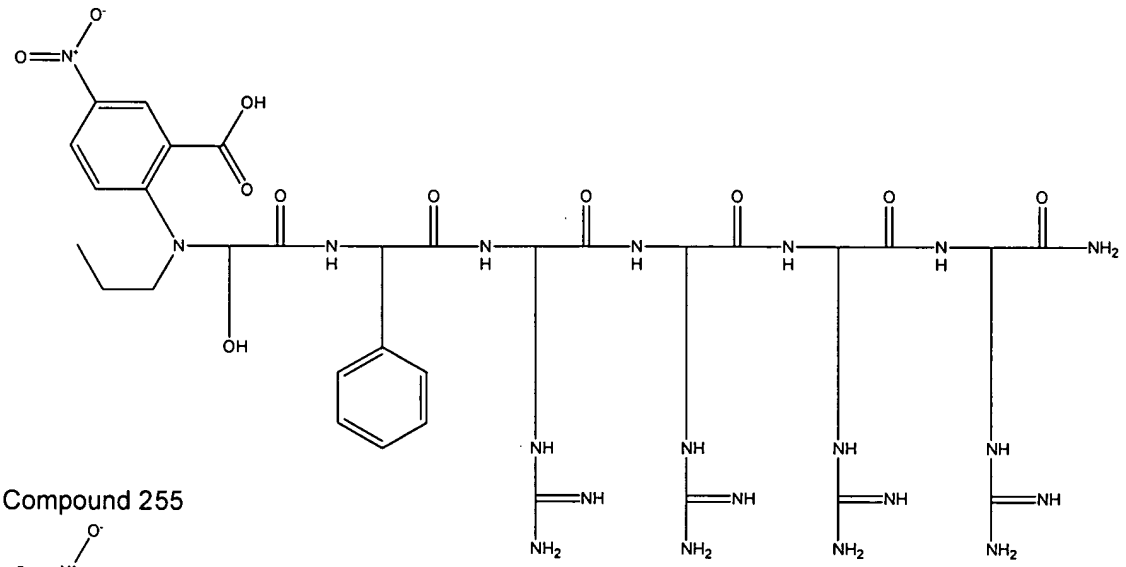
Compound 252



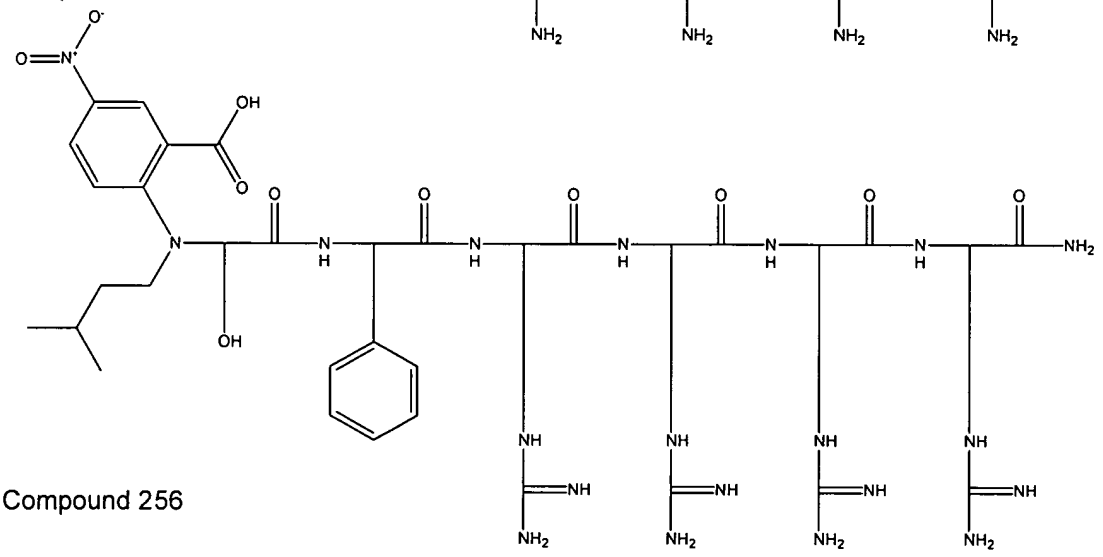
Compound 253



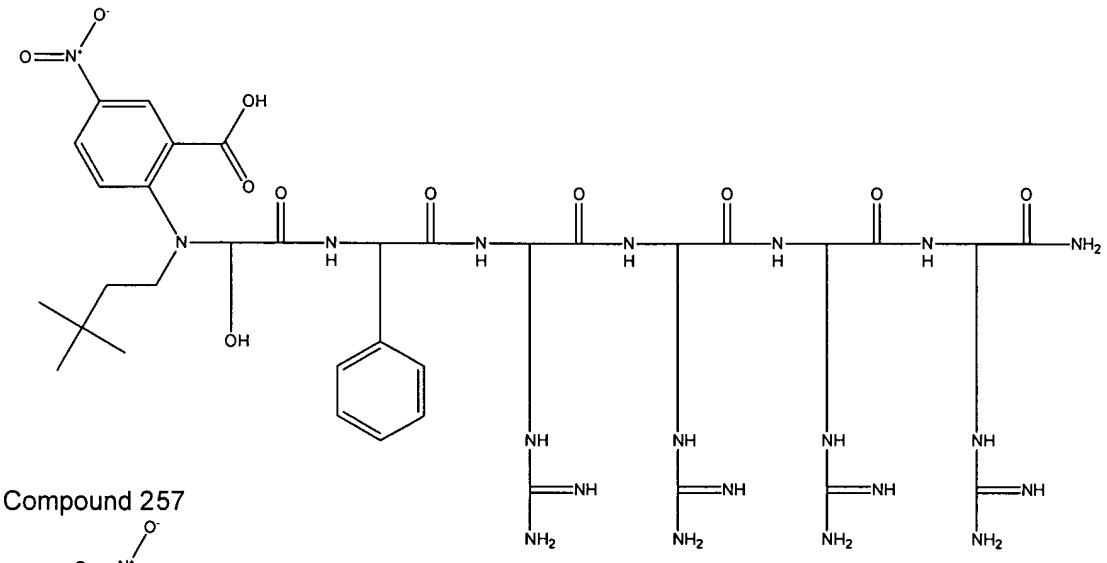
Compound 254



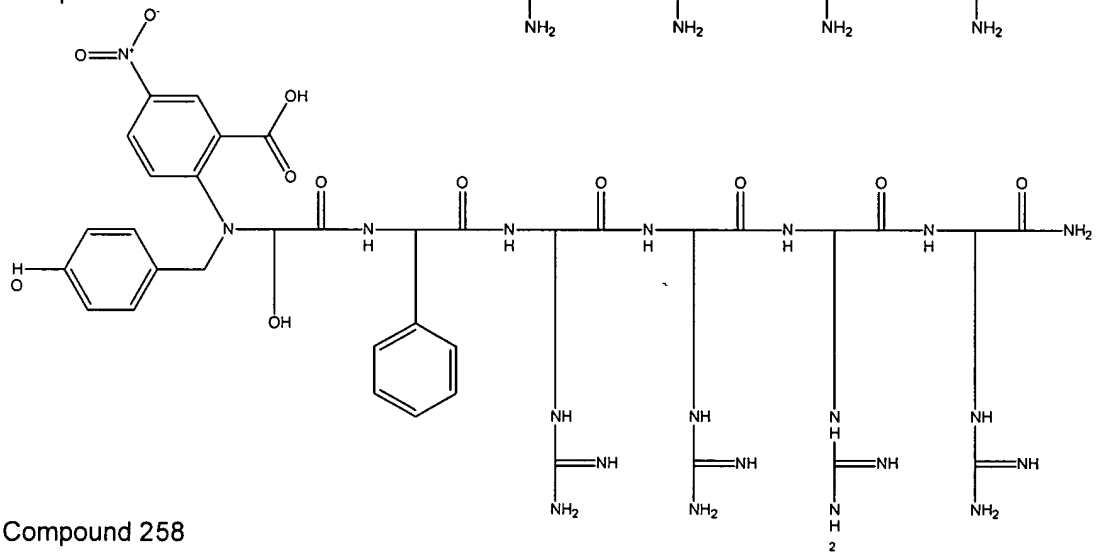
Compound 255



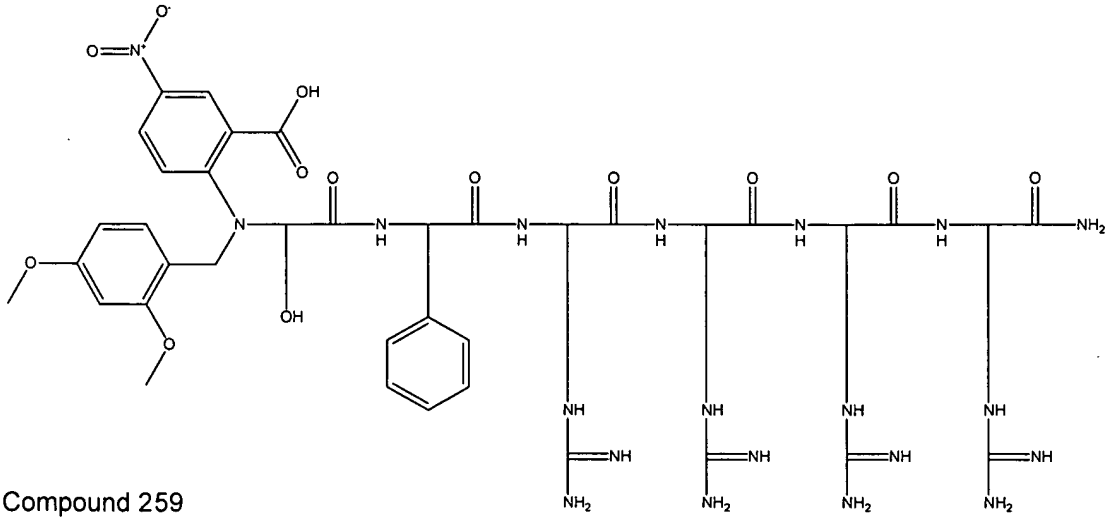
Compound 256



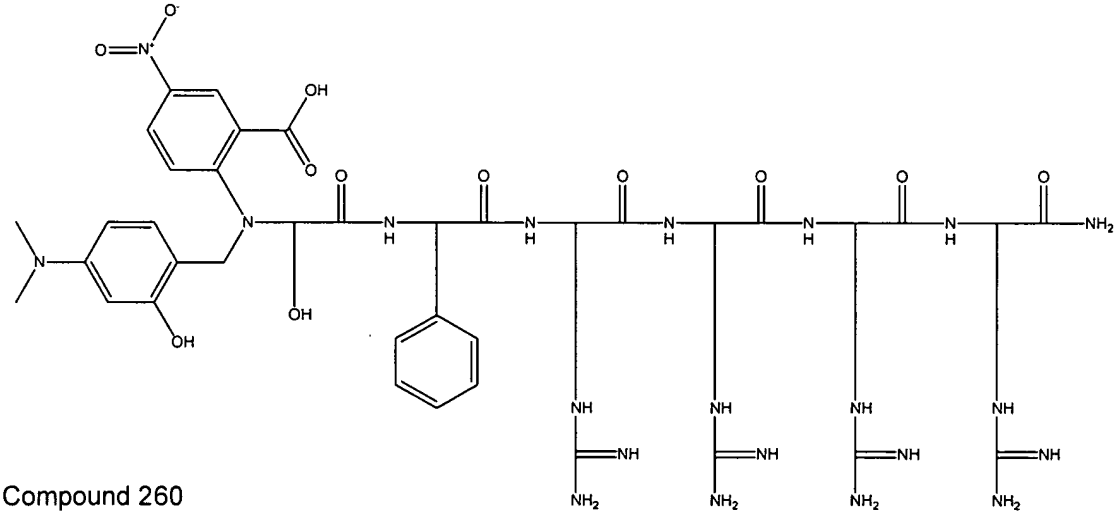
Compound 257



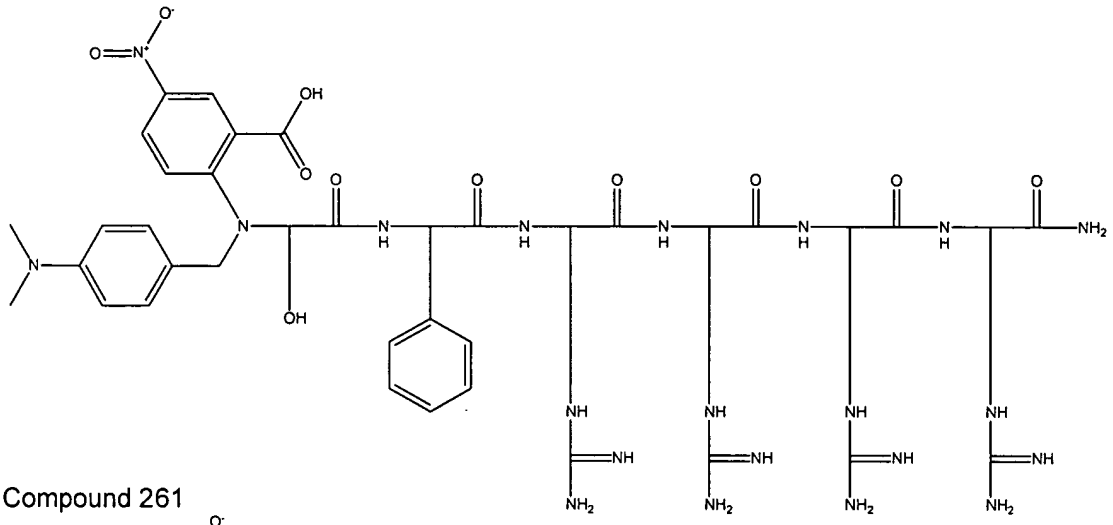
Compound 258



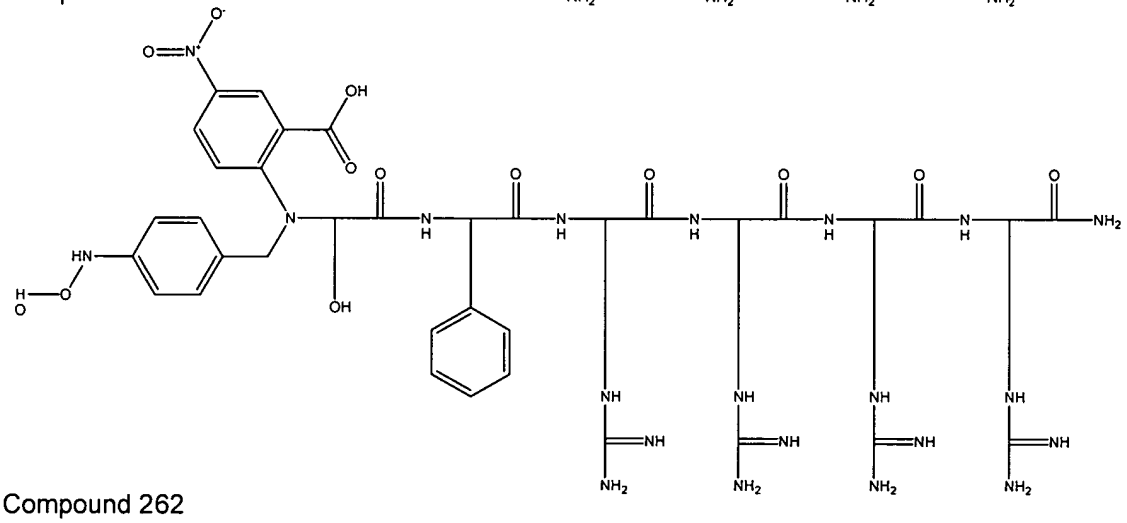
Compound 259



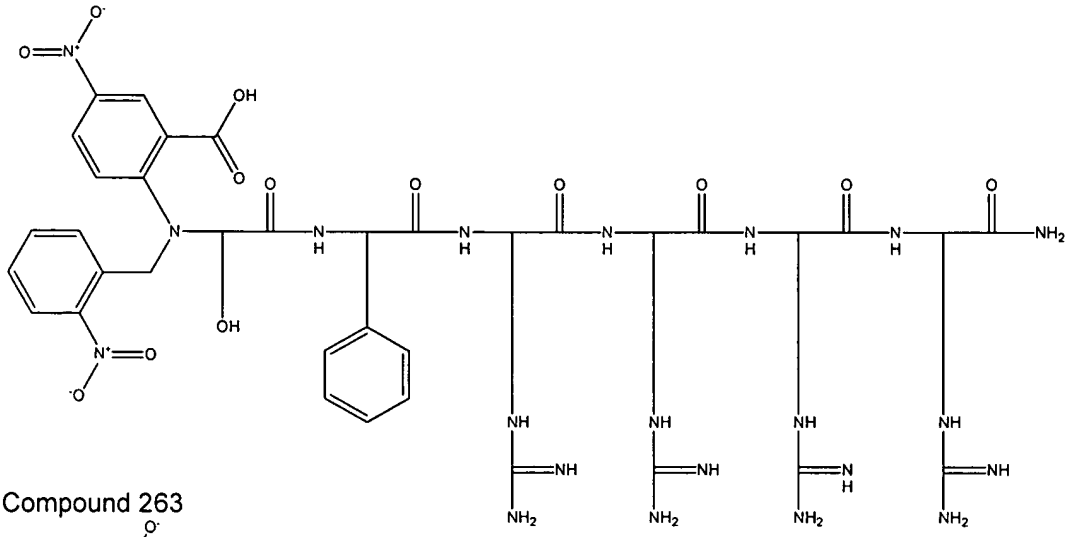
Compound 260



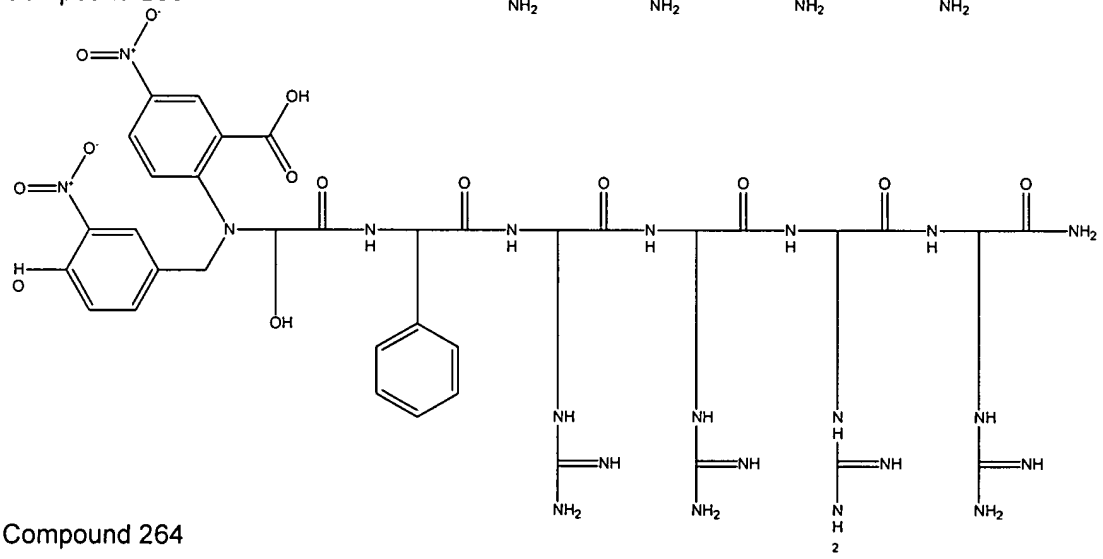
Compound 261



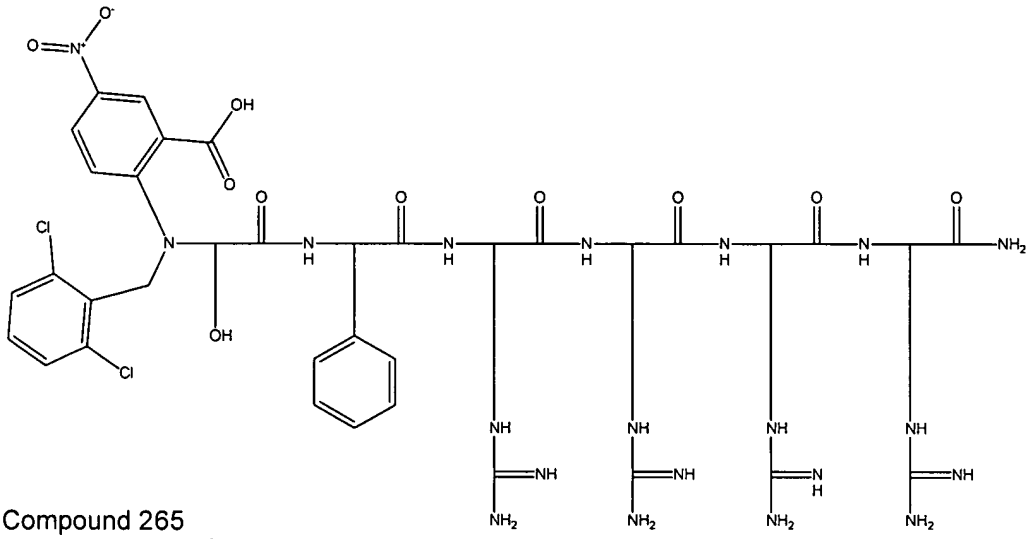
Compound 262



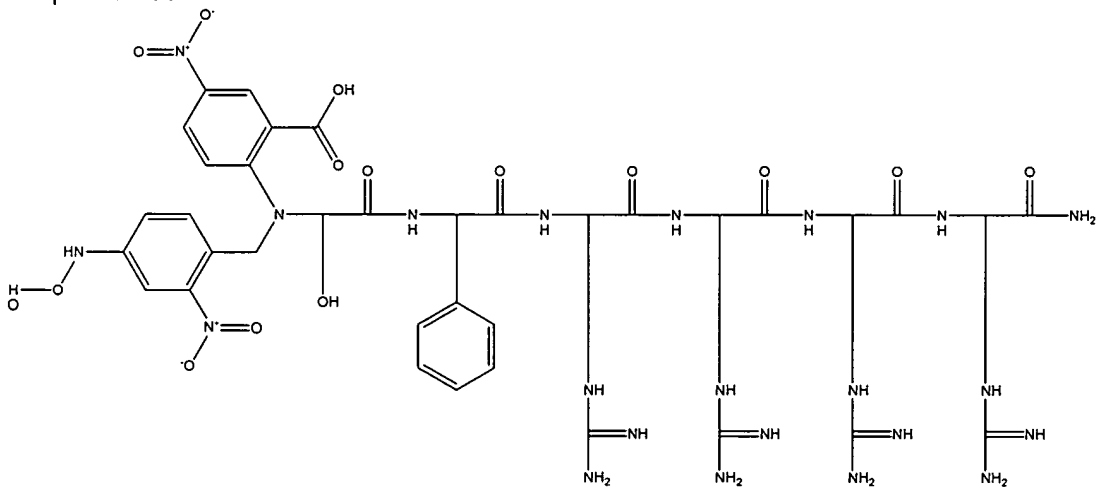
Compound 263



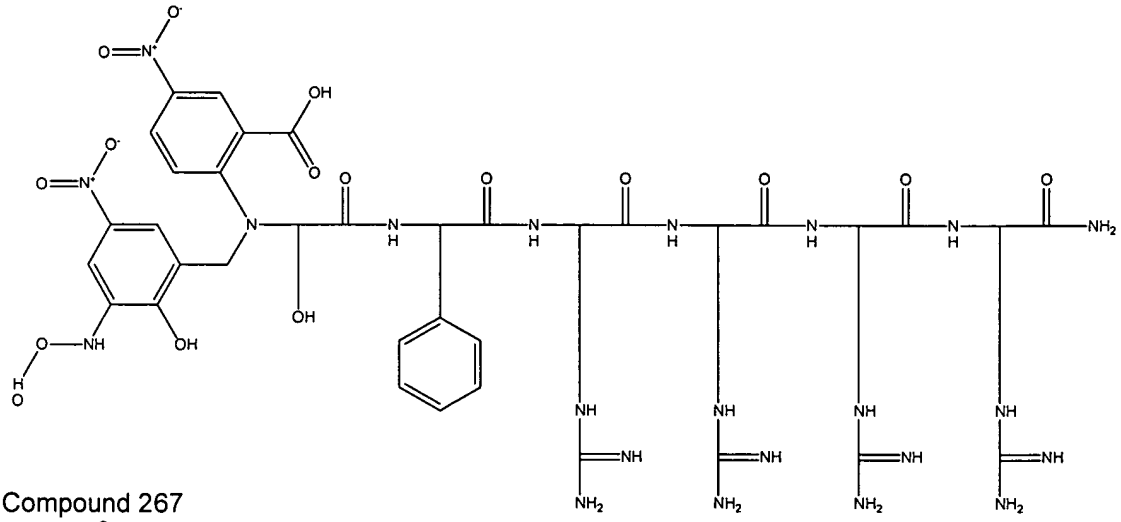
Compound 264



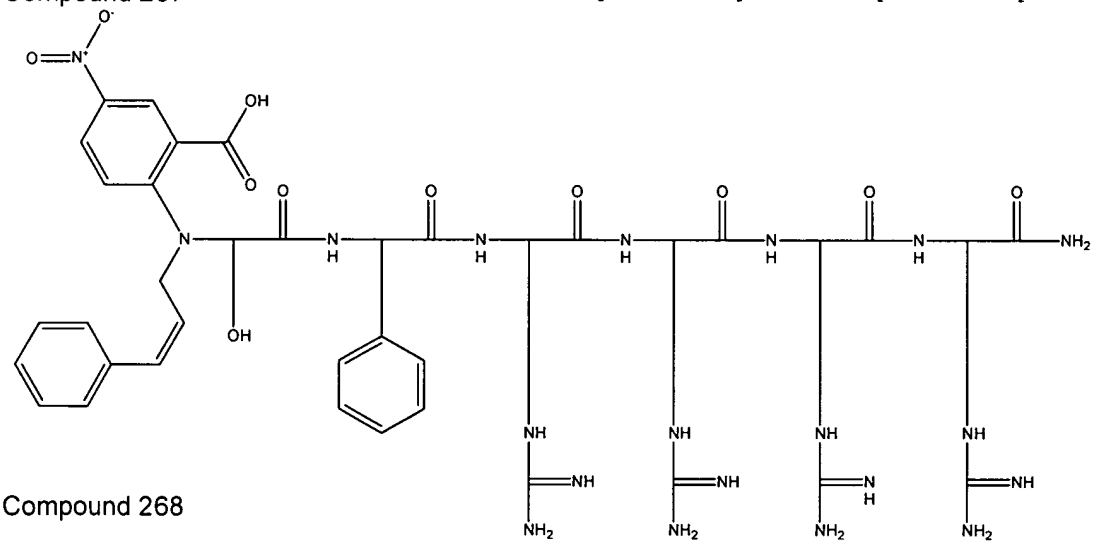
Compound 265



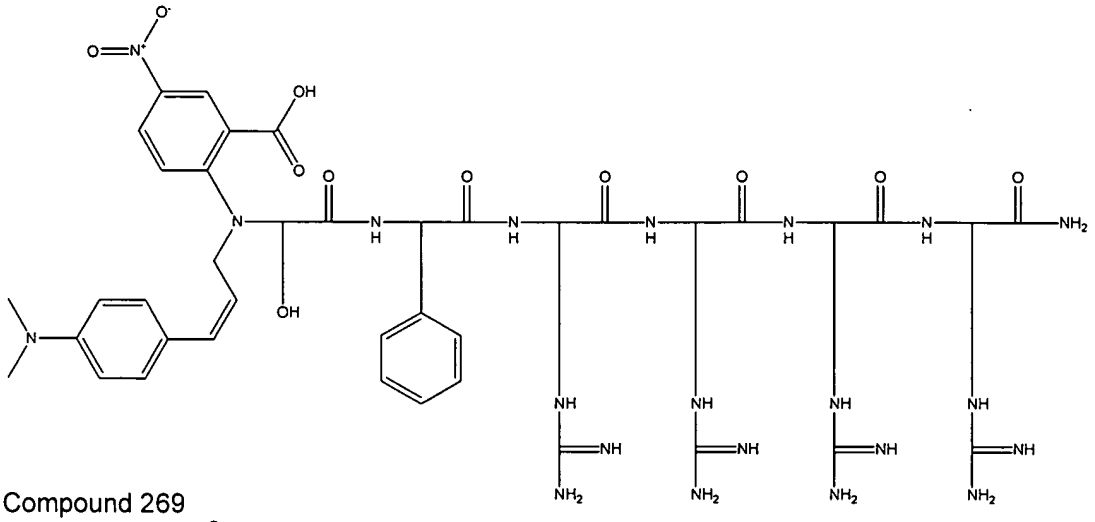
Compound 266



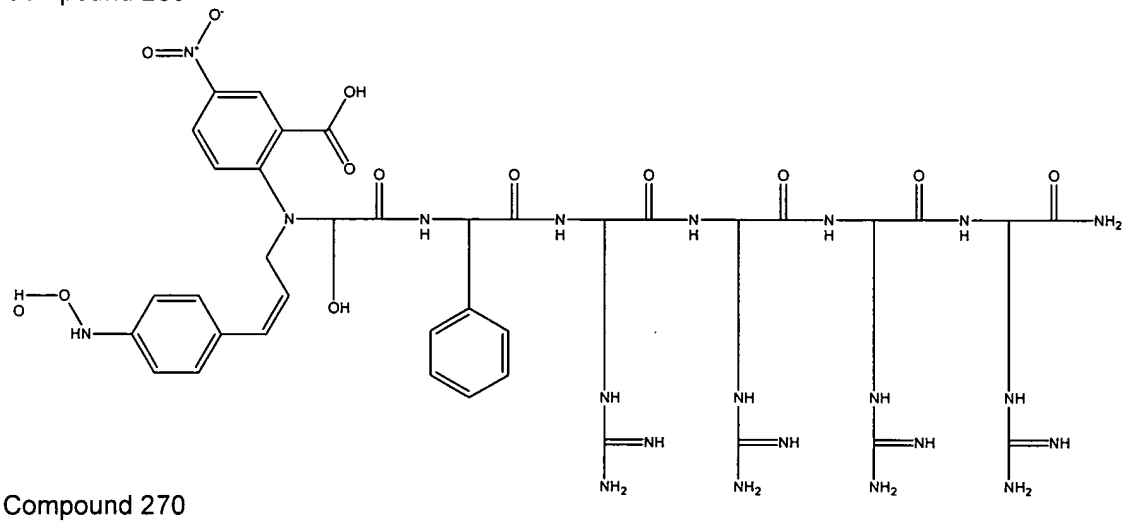
Compound 267



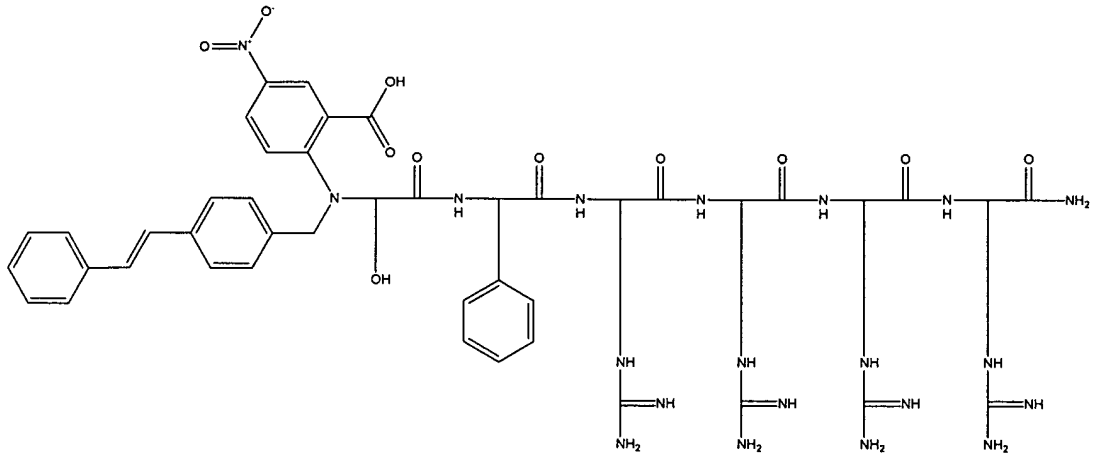
Compound 268



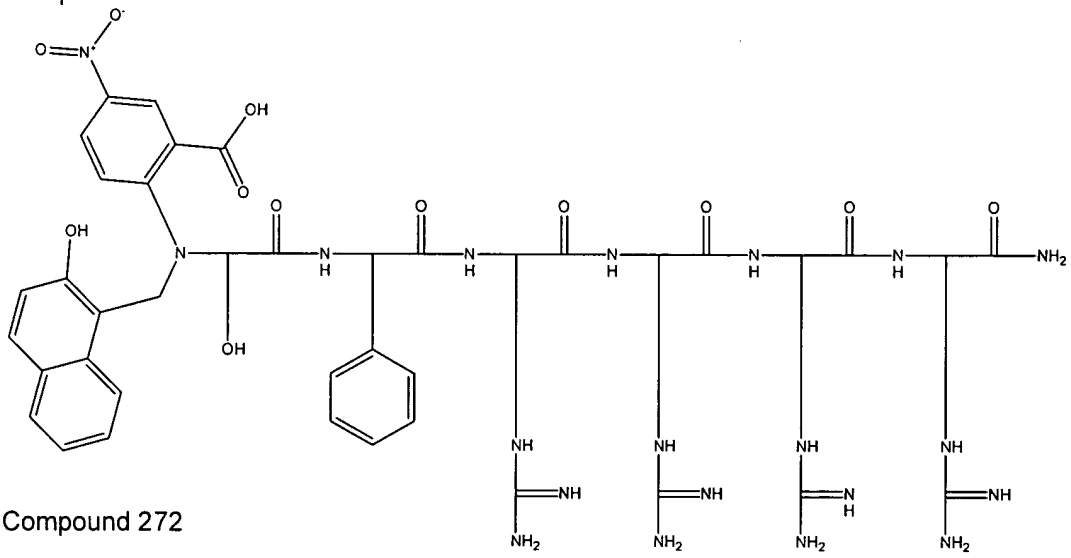
Compound 269



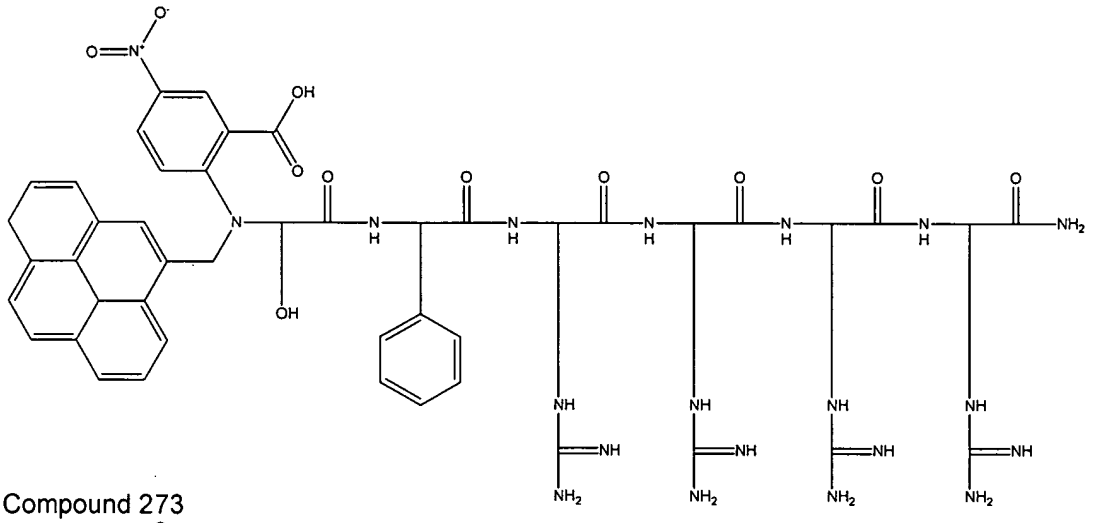
Compound 270



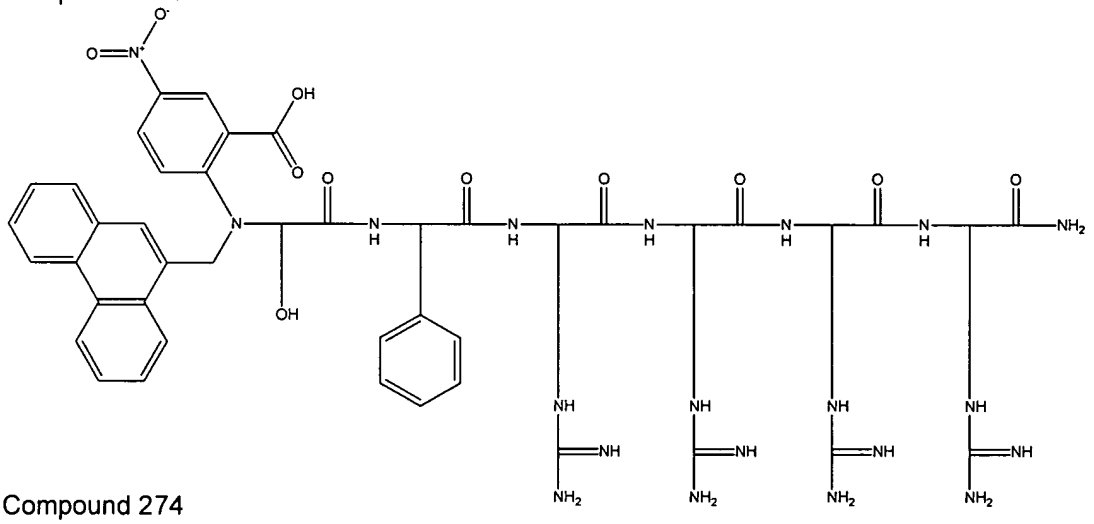
Compound 271



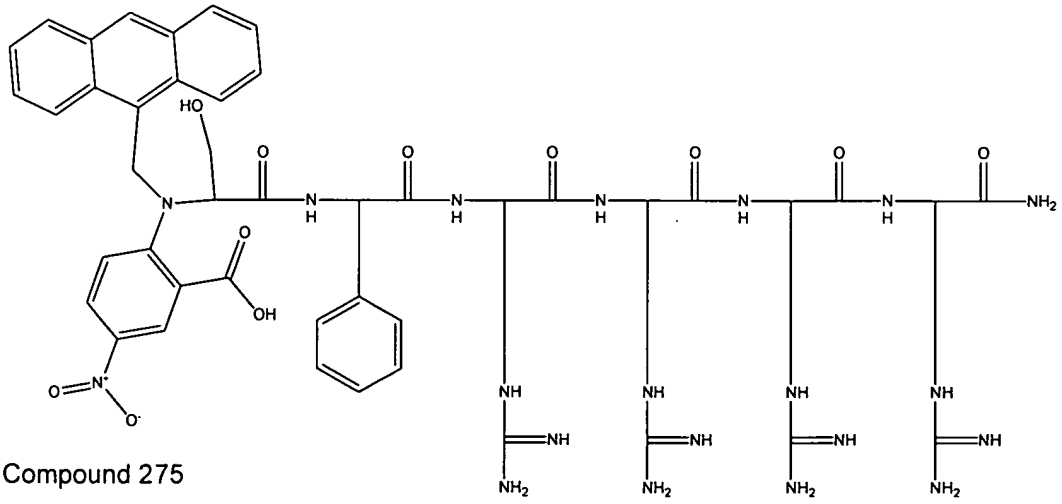
Compound 272



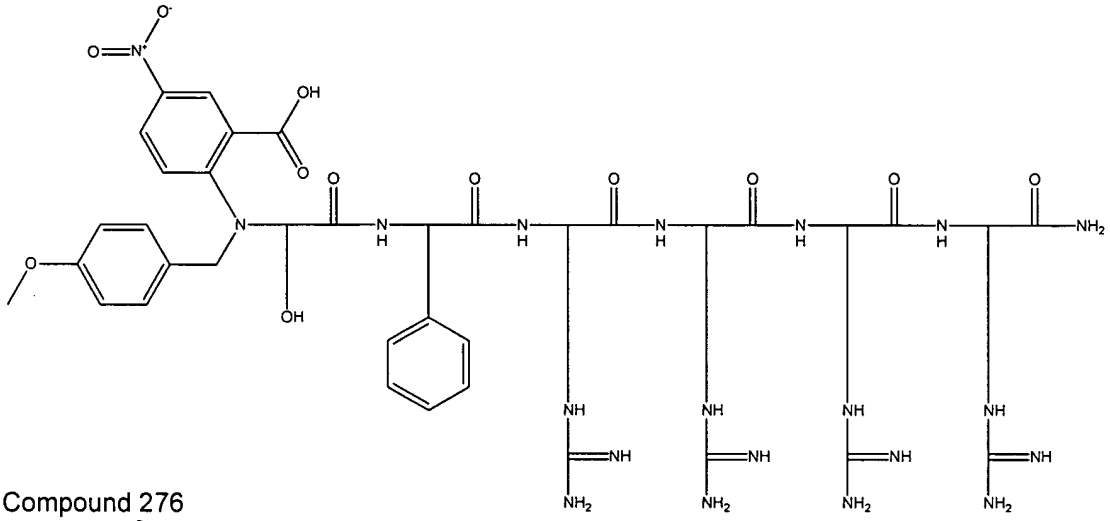
Compound 273



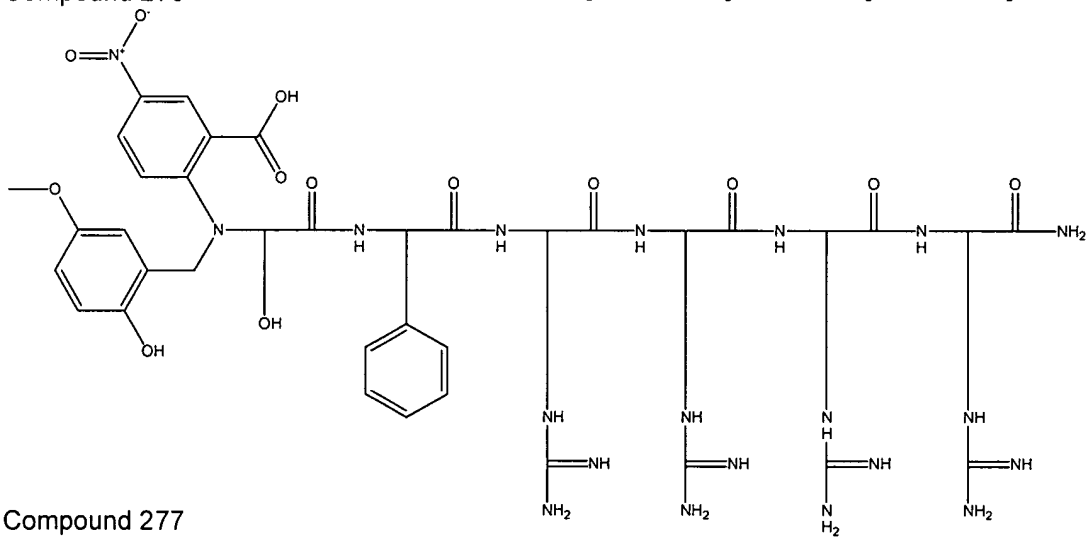
Compound 274



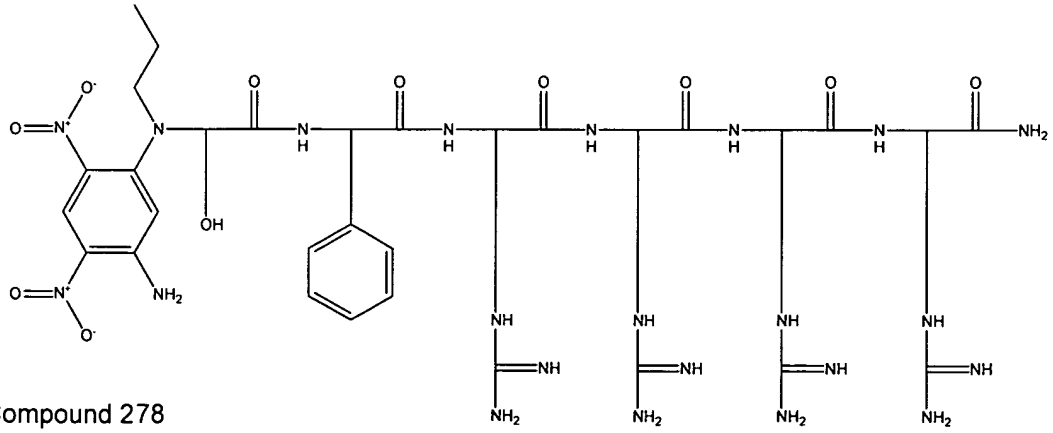
Compound 275



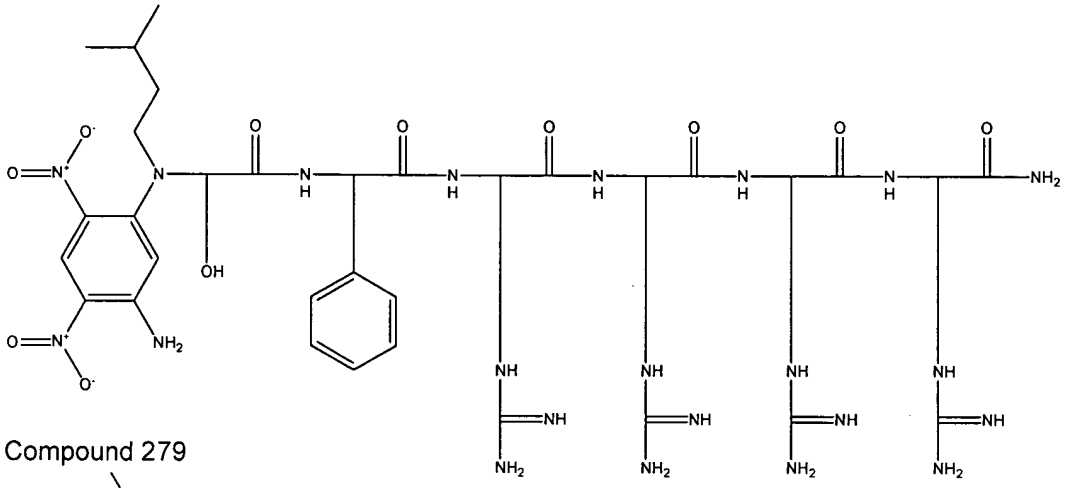
Compound 276



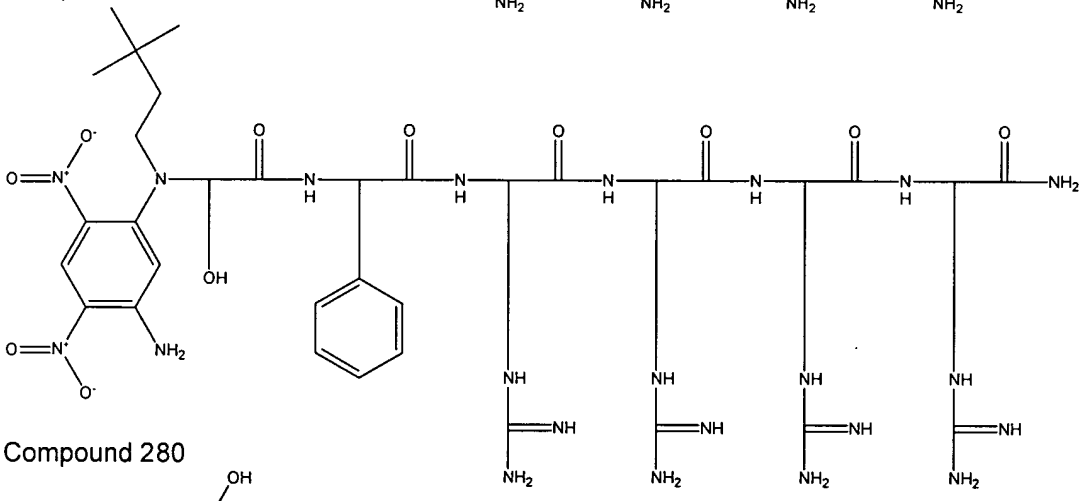
Compound 277



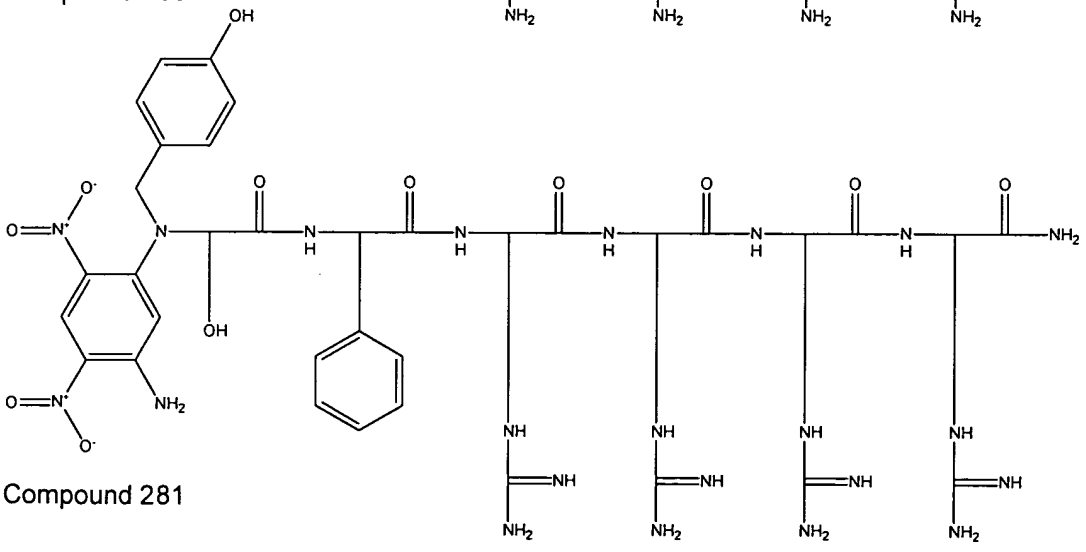
Compound 278



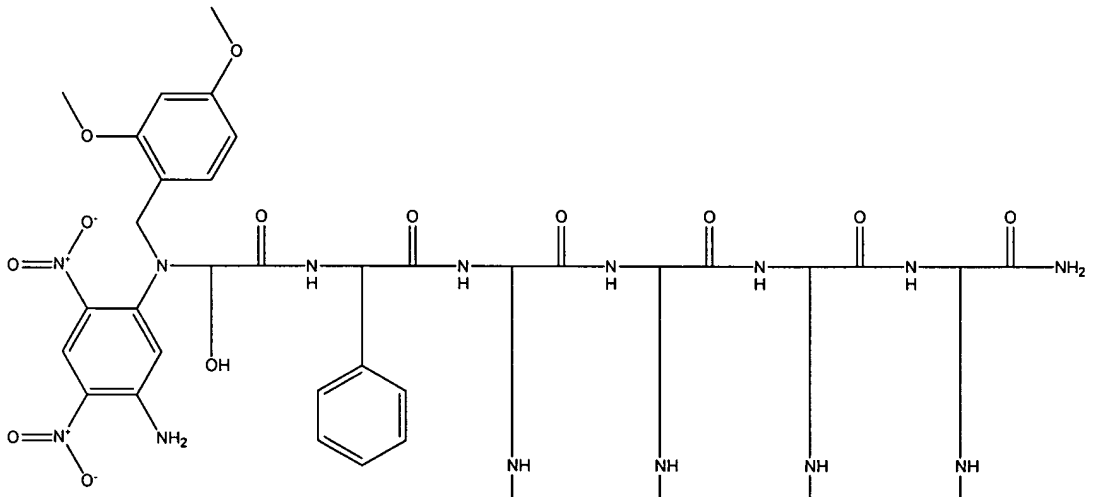
Compound 279



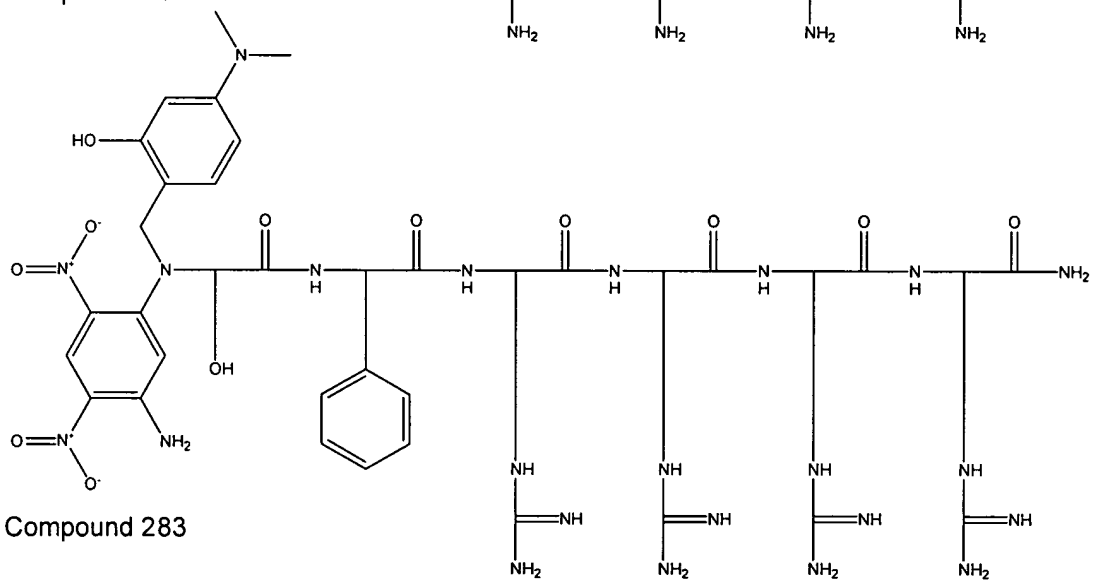
Compound 280



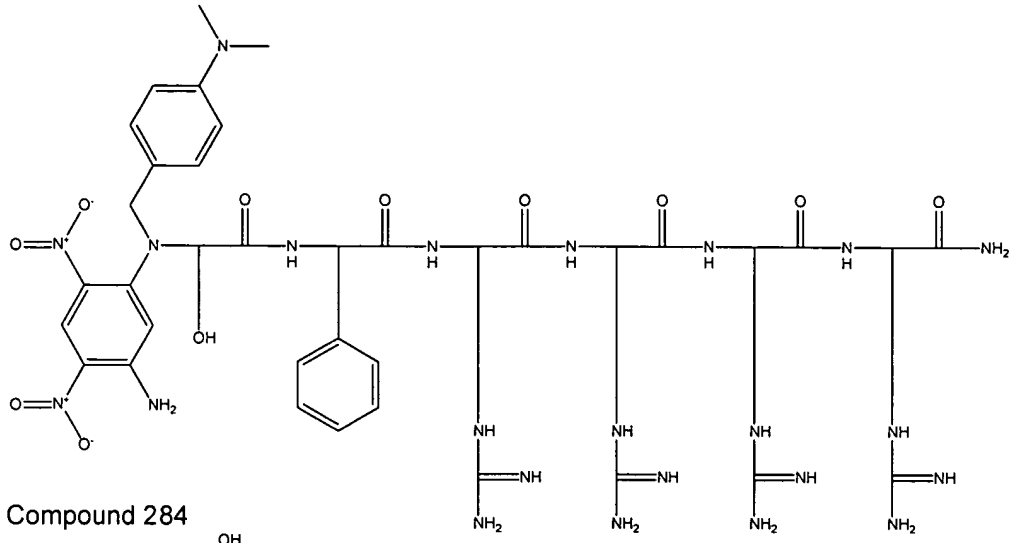
Compound 281



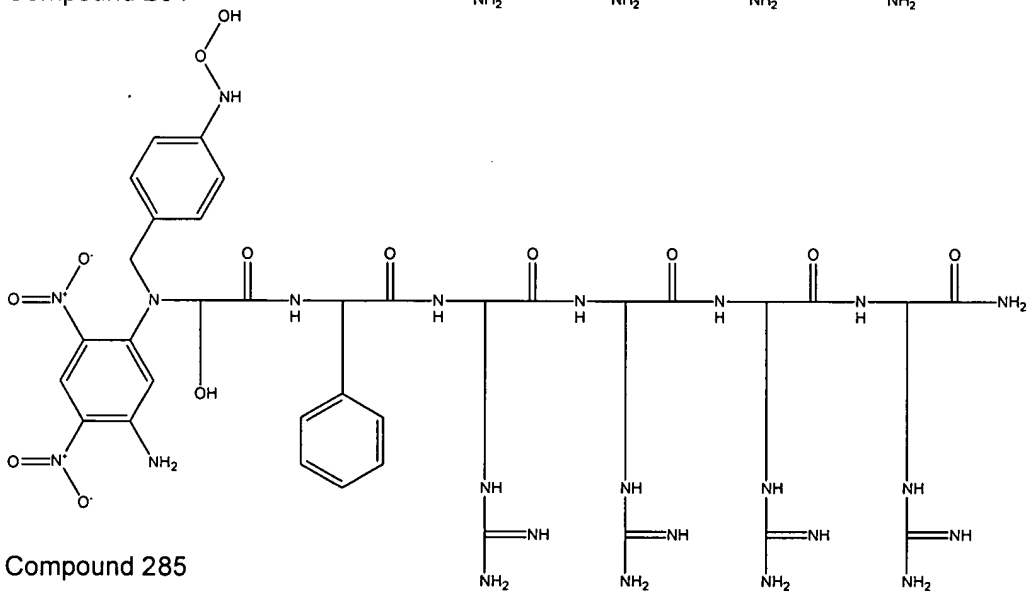
Compound 282



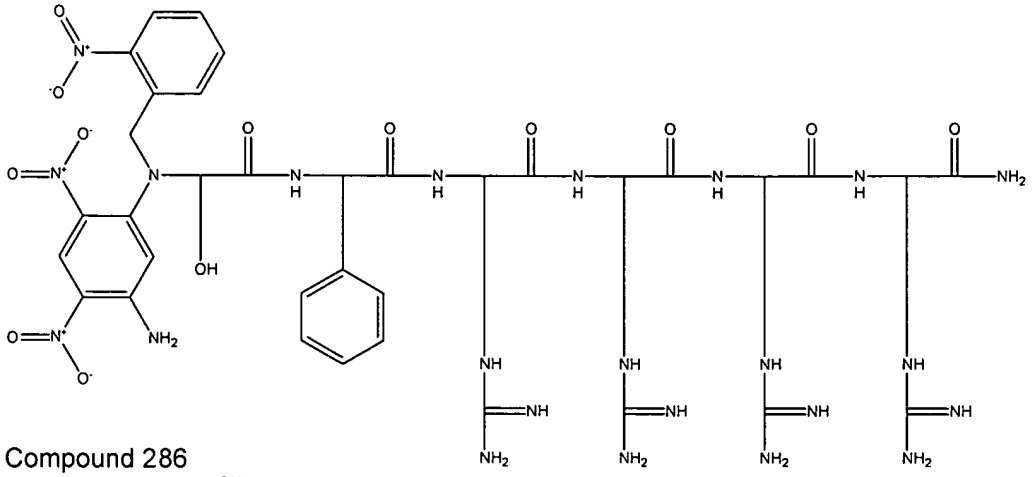
Compound 283



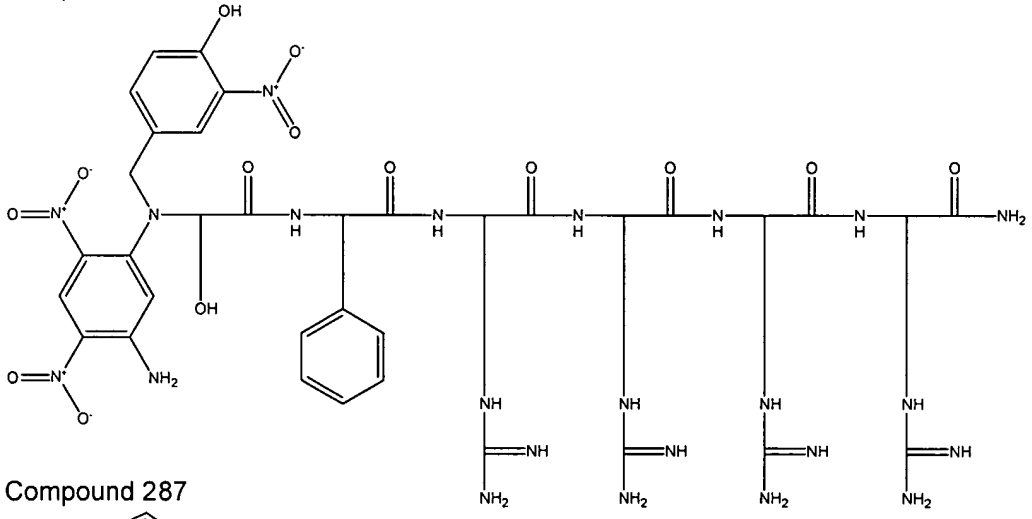
Compound 284



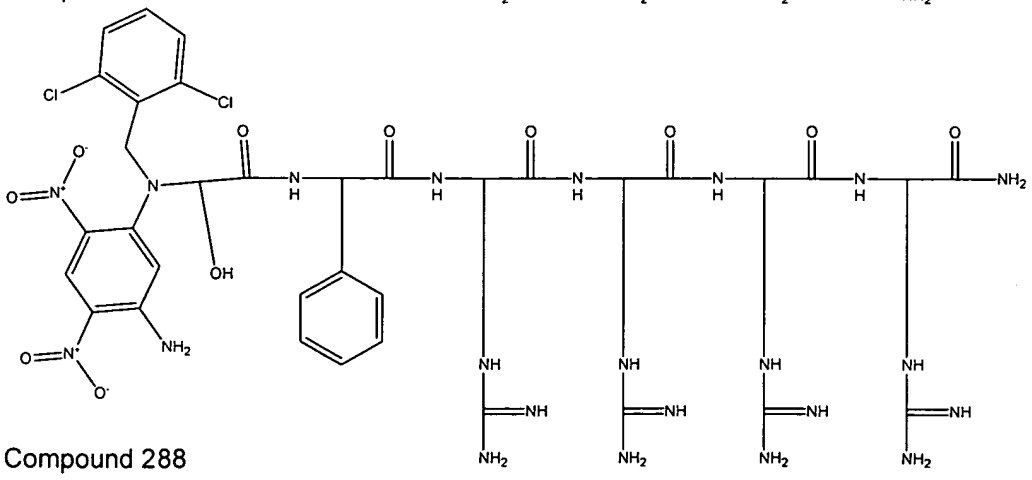
Compound 285



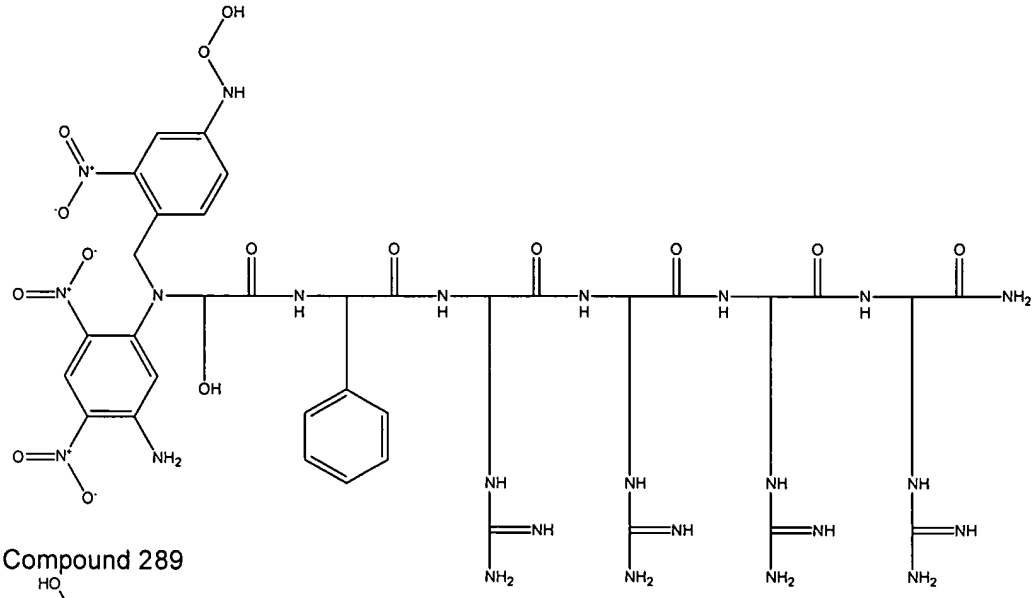
Compound 286



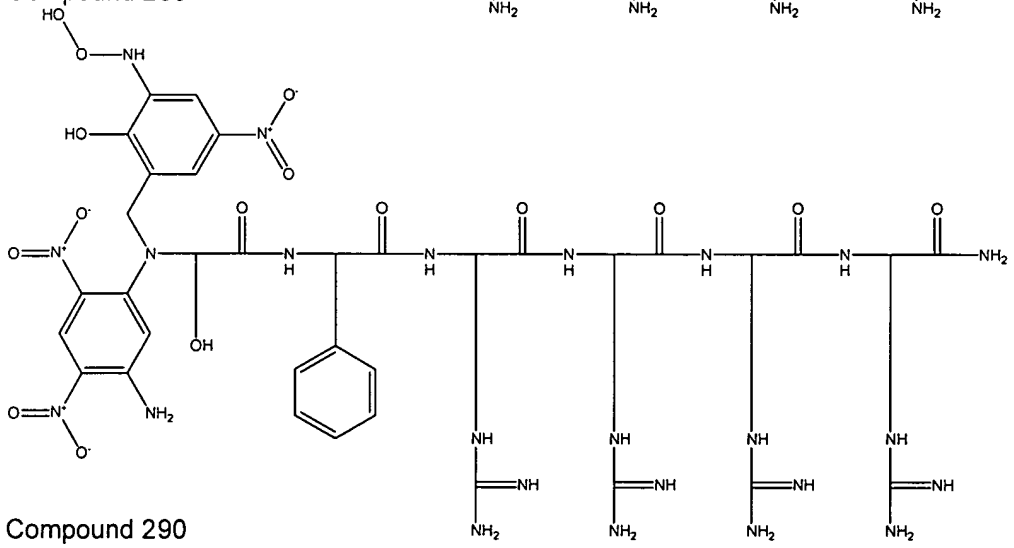
Compound 287



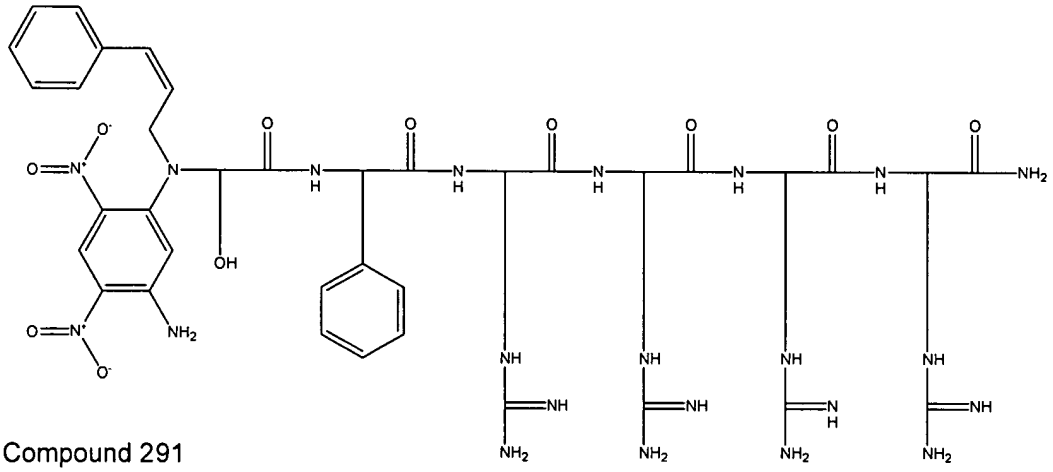
Compound 288



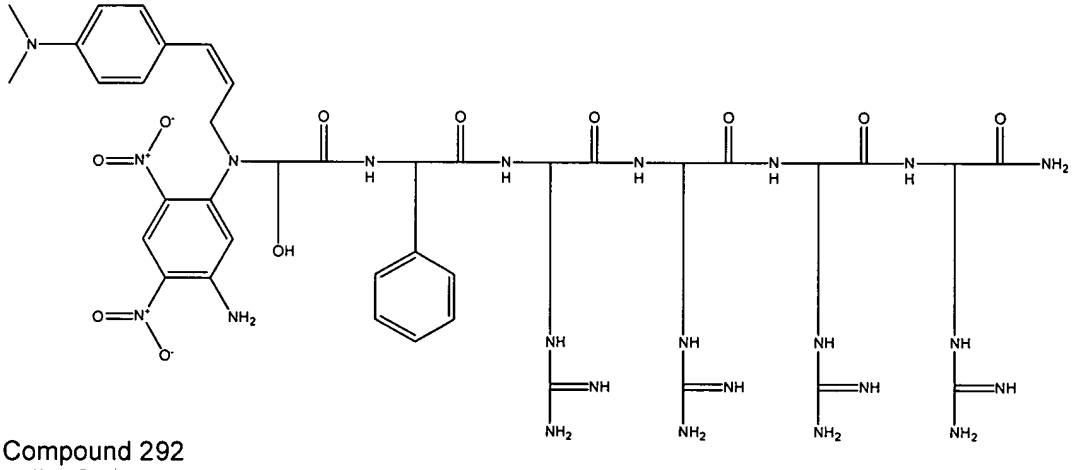
Compound 289



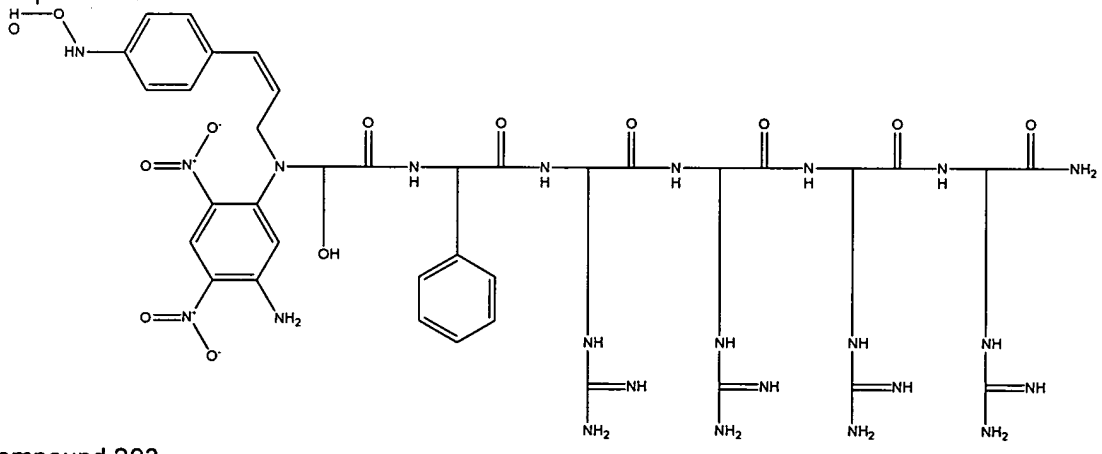
Compound 290



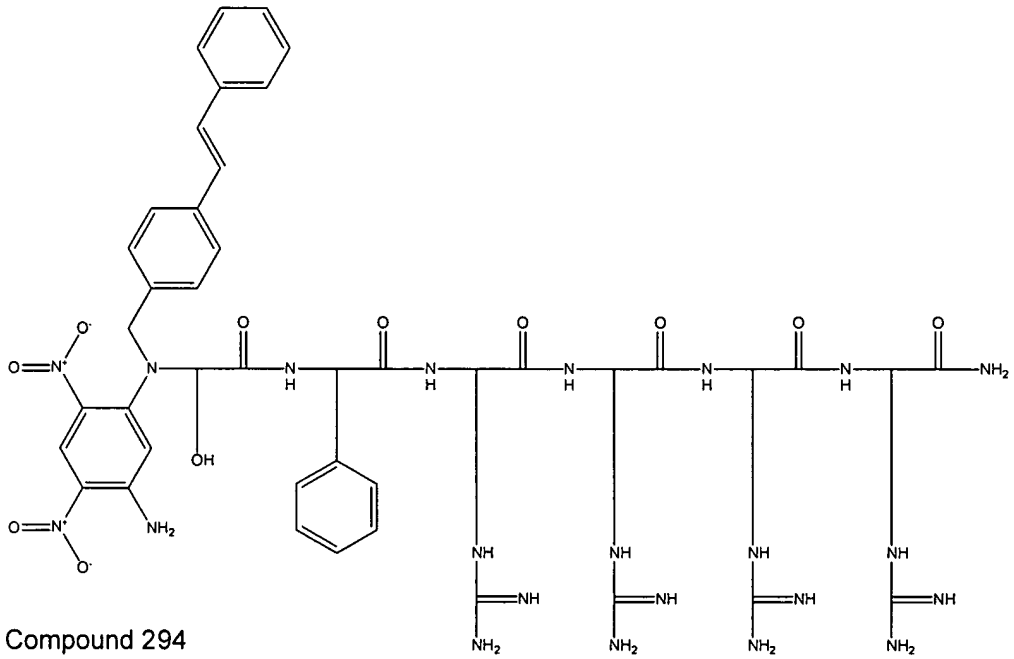
Compound 291



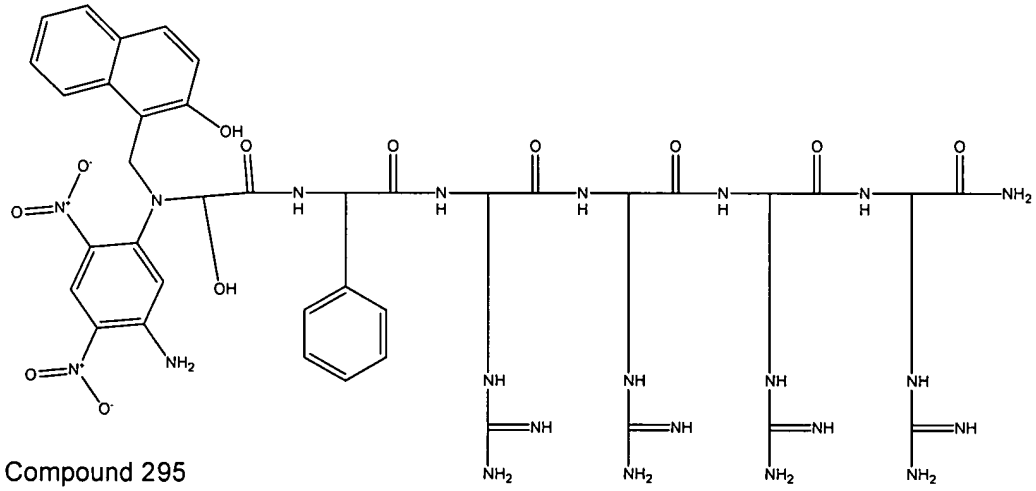
Compound 292



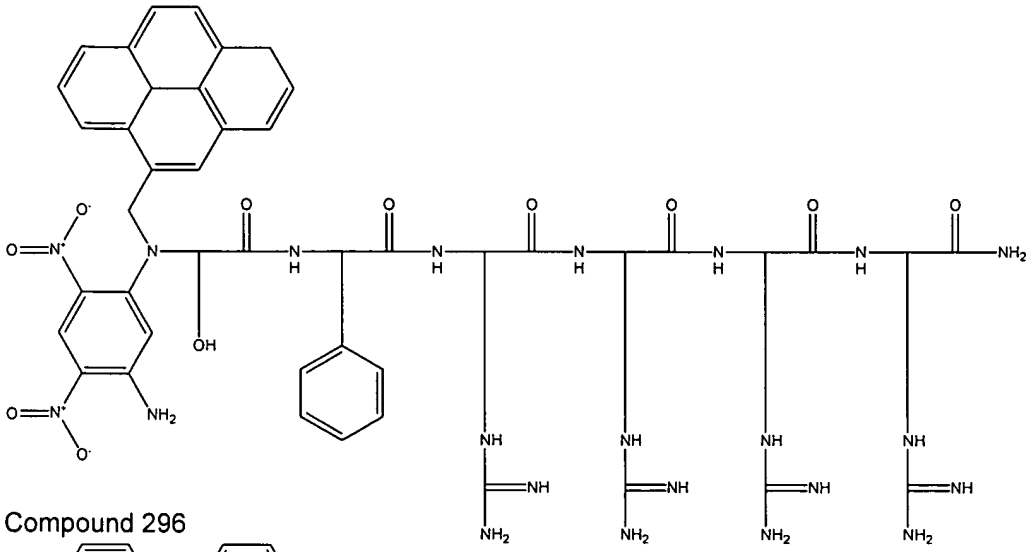
Compound 293



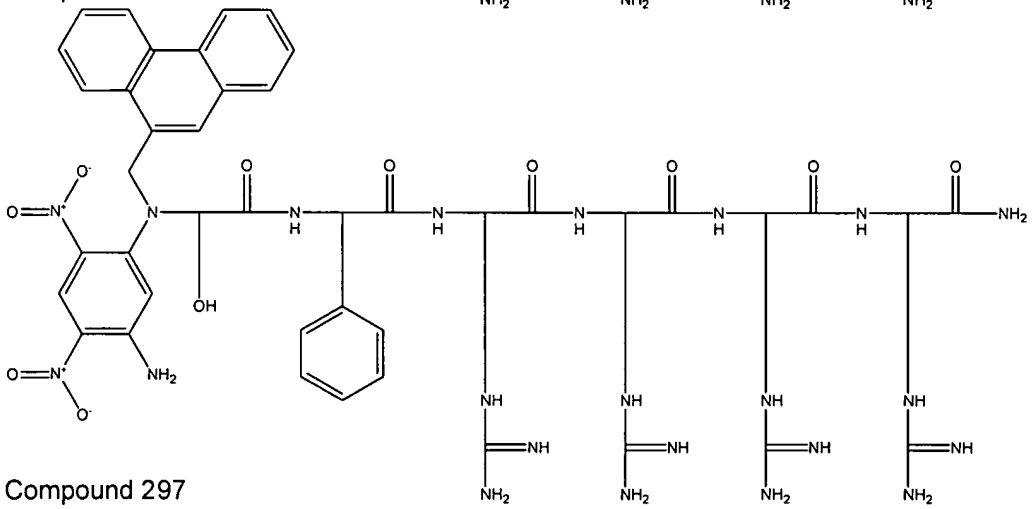
Compound 294



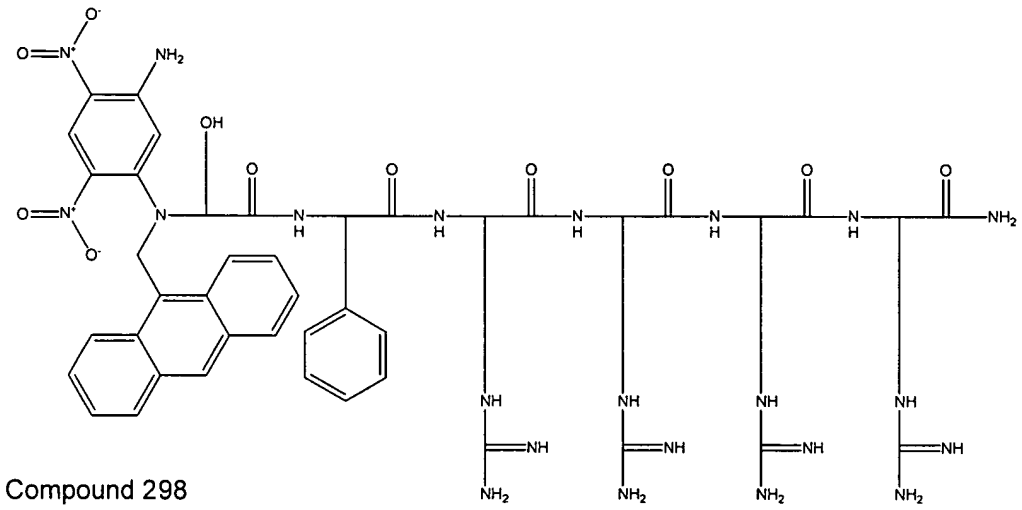
Compound 295



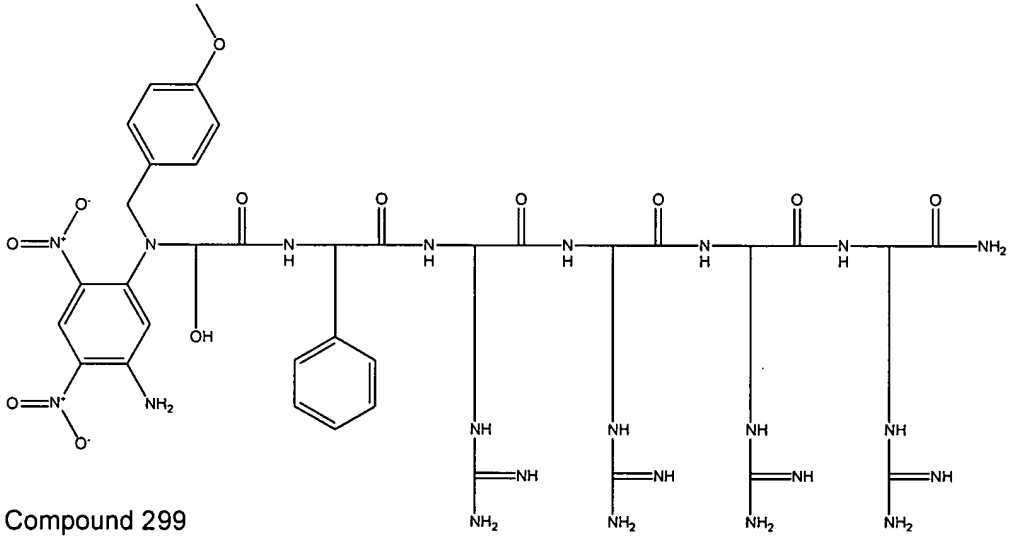
Compound 296



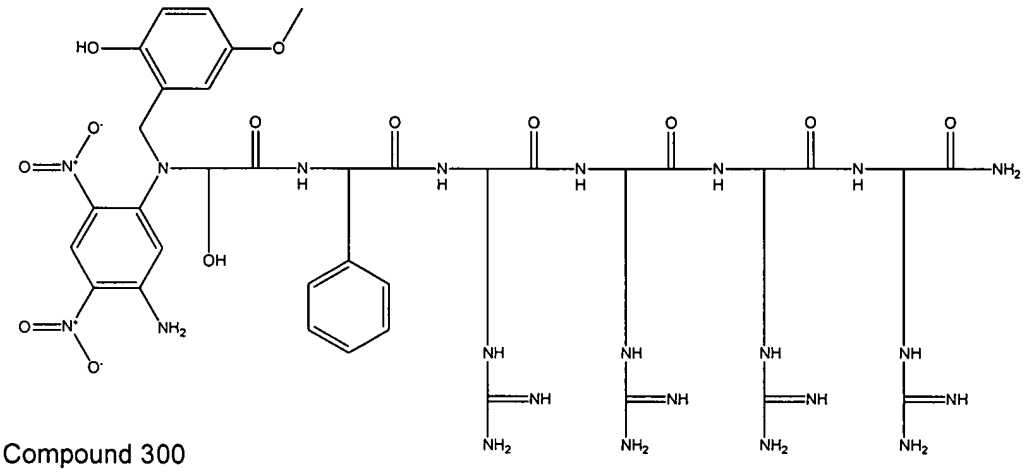
Compound 297



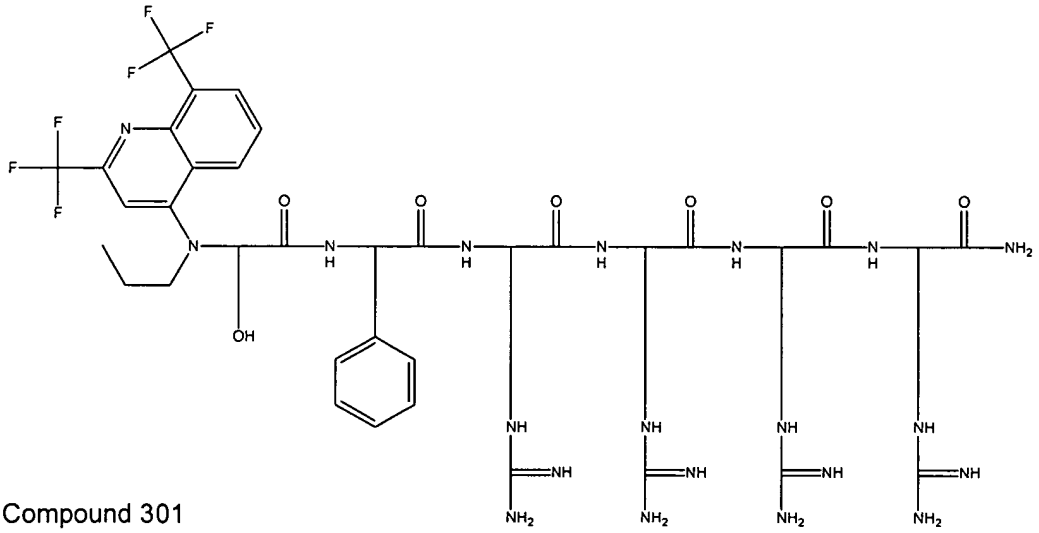
Compound 298



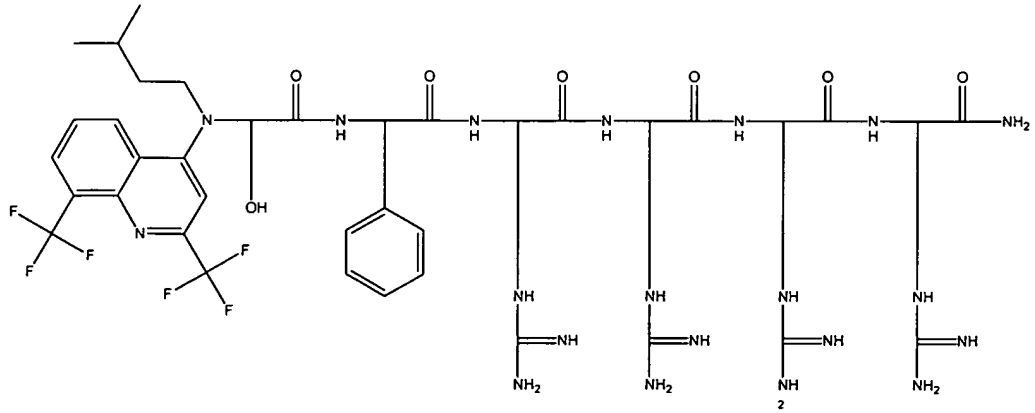
Compound 299



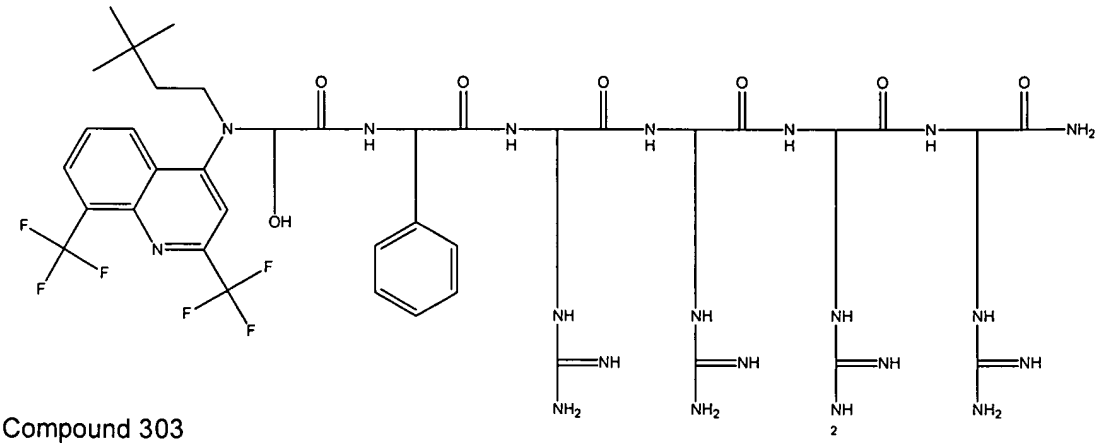
Compound 300



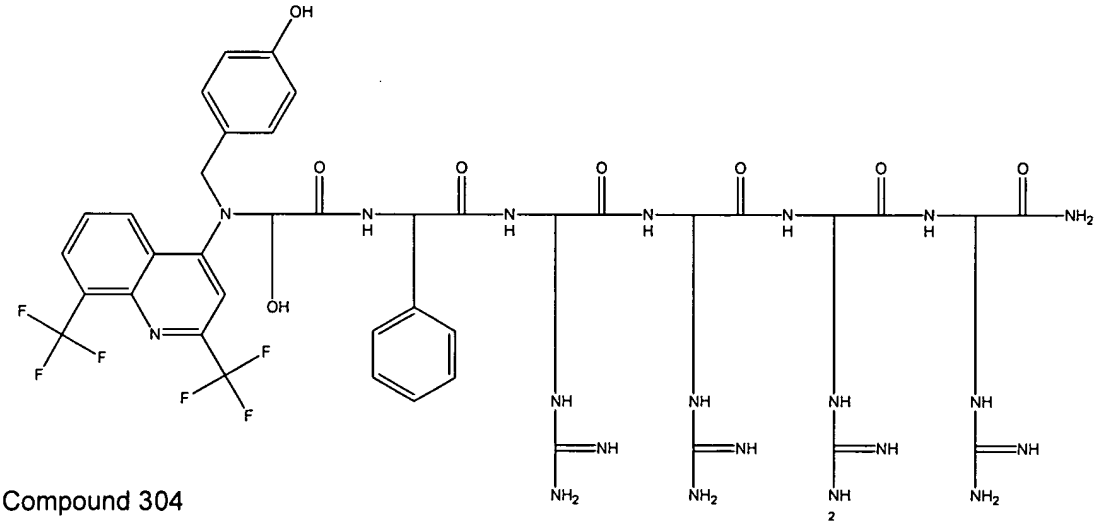
Compound 301



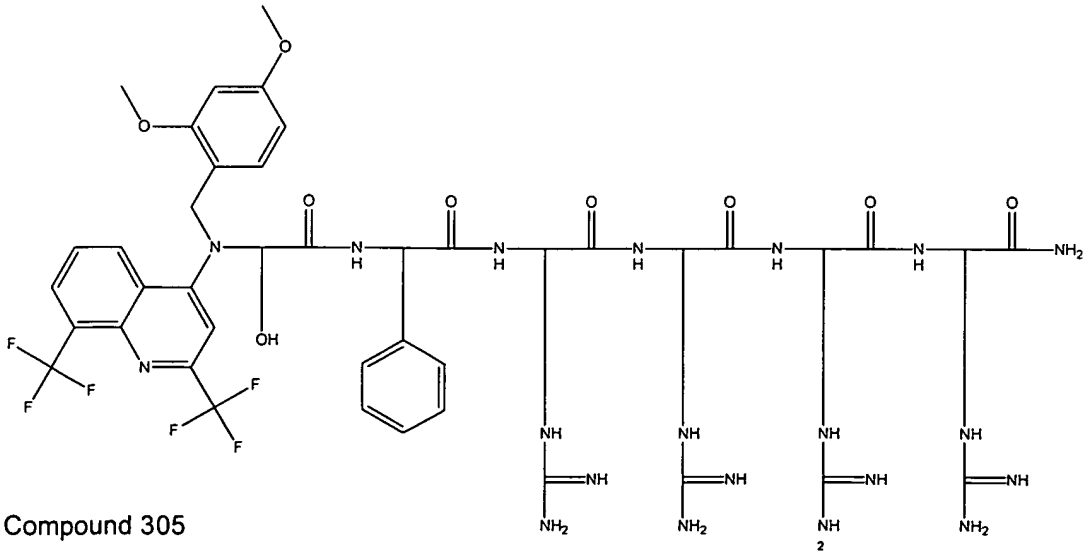
Compound 302



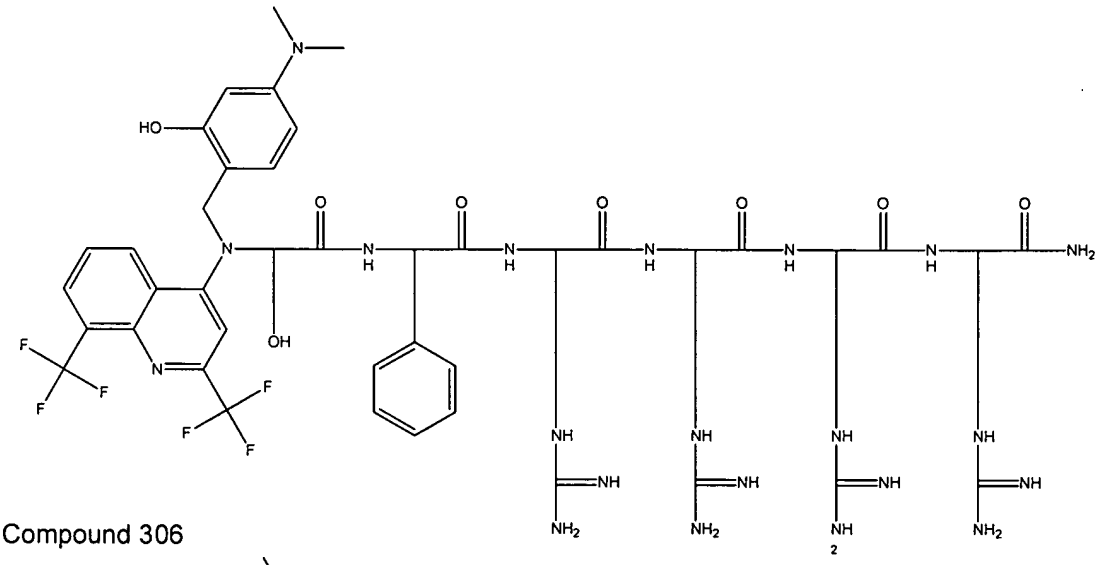
Compound 303



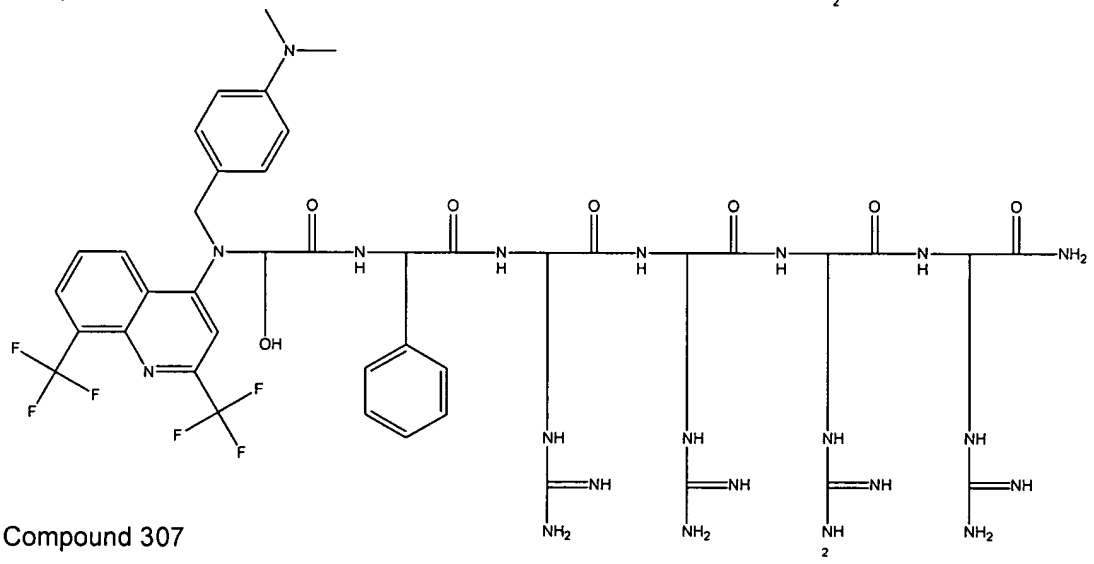
Compound 304



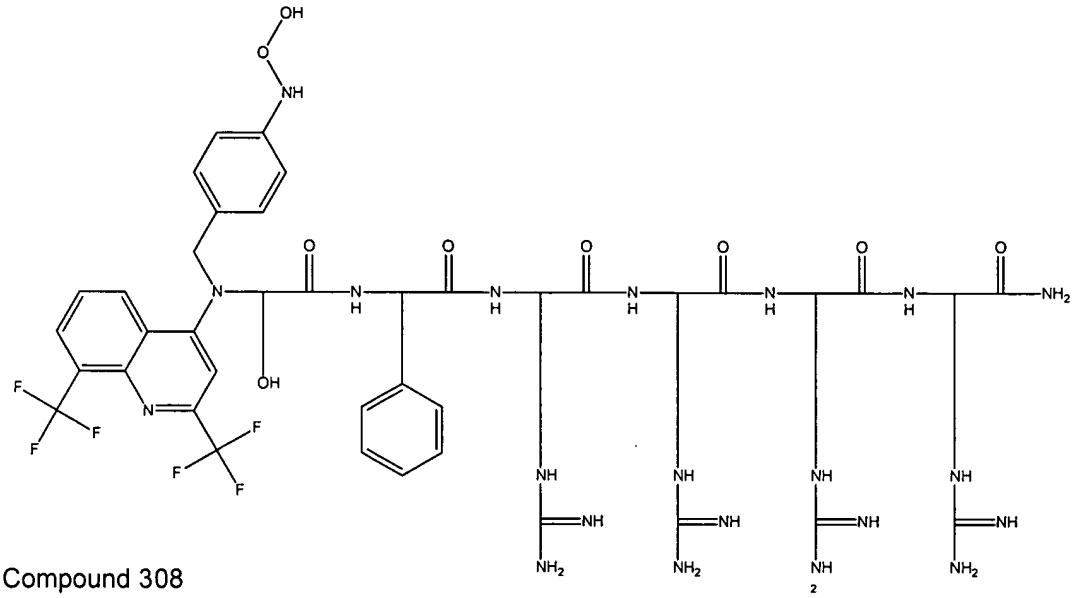
Compound 305



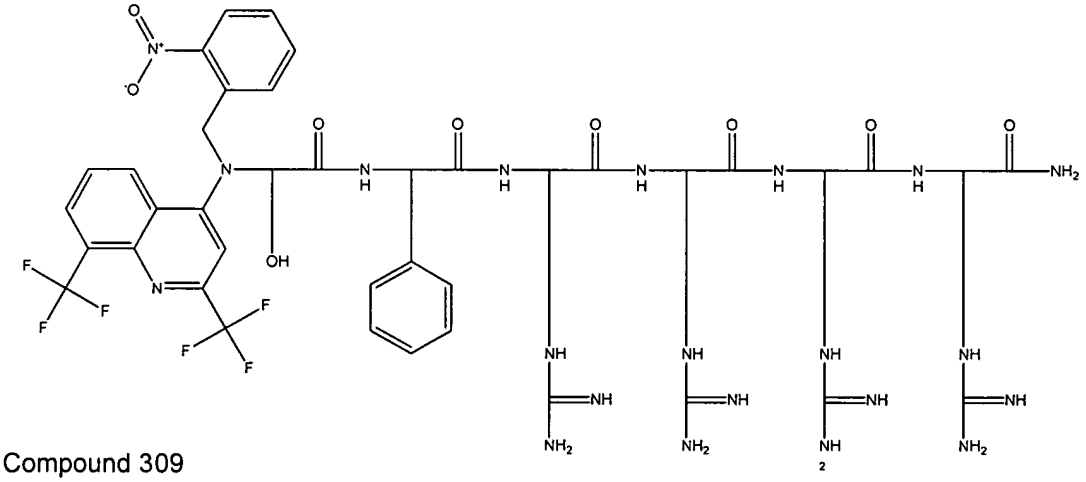
Compound 306



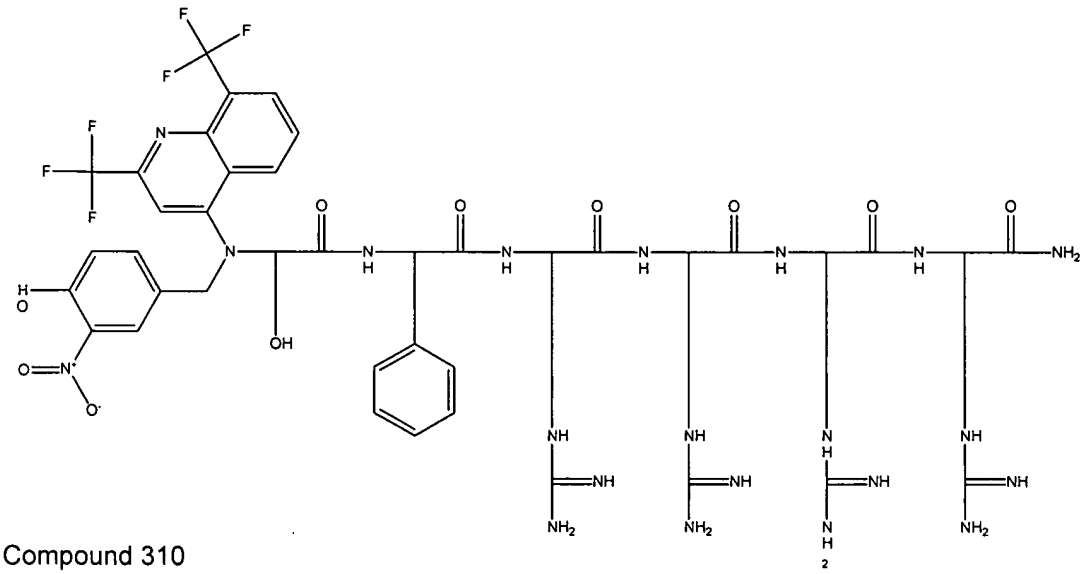
Compound 307



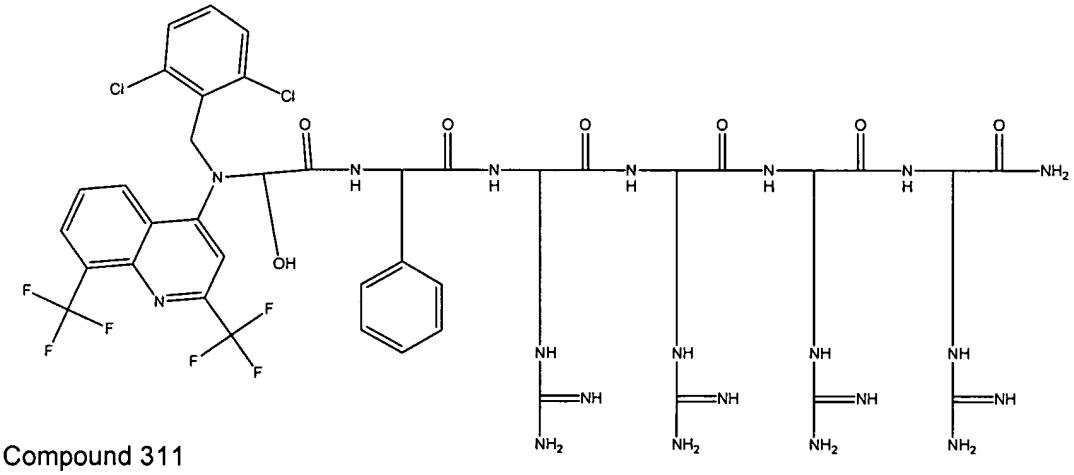
Compound 308



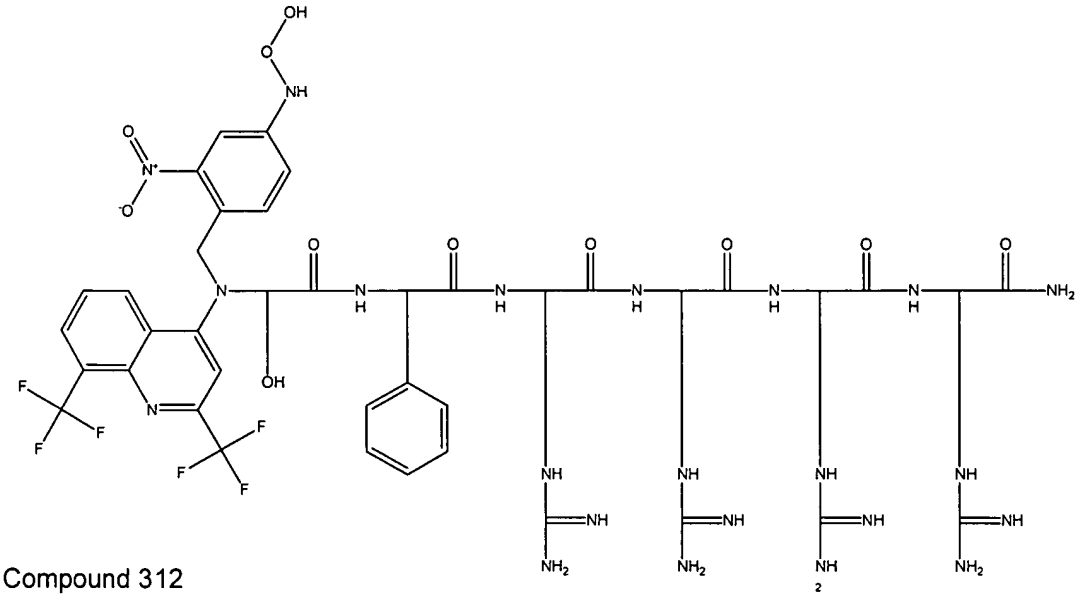
Compound 309



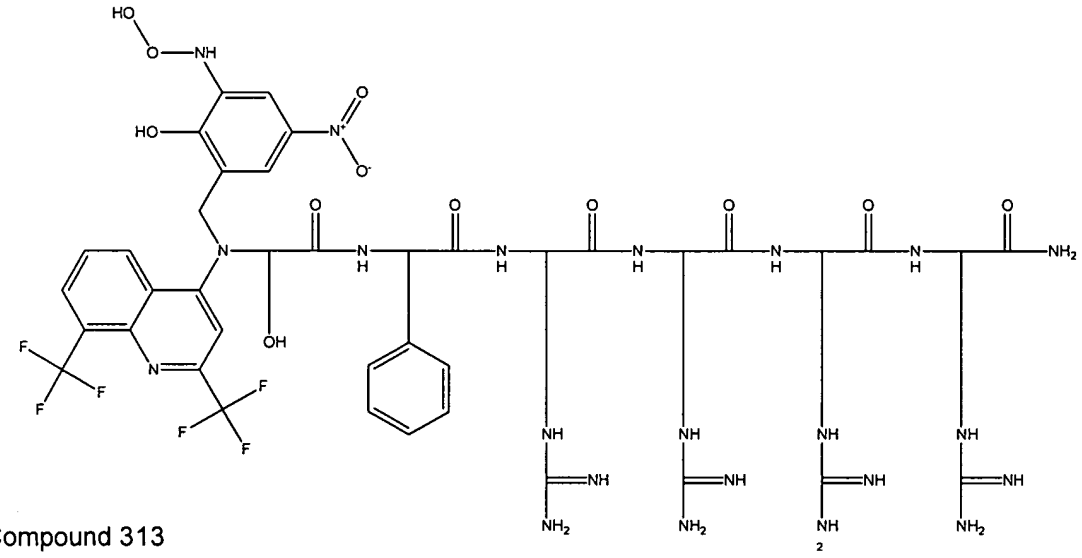
Compound 310



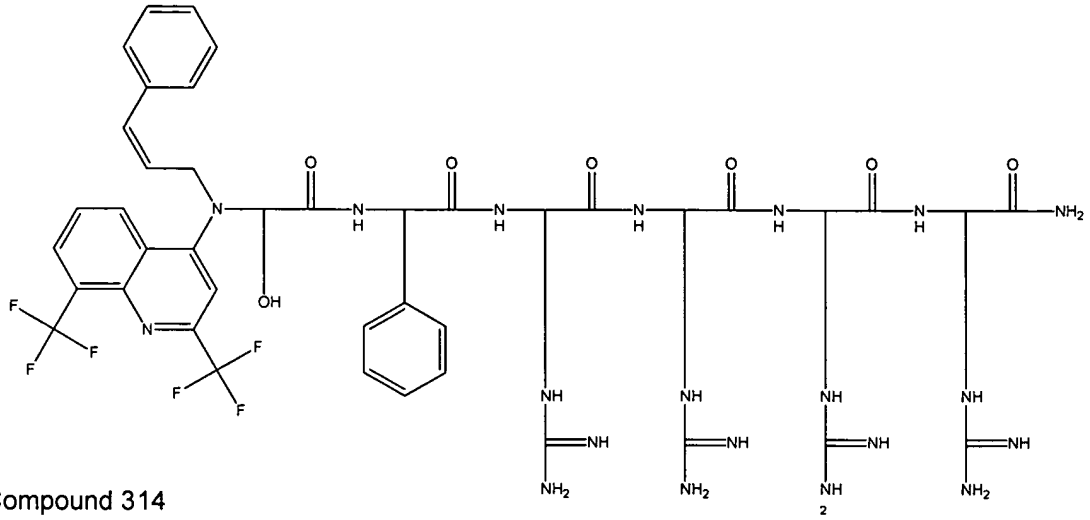
Compound 311



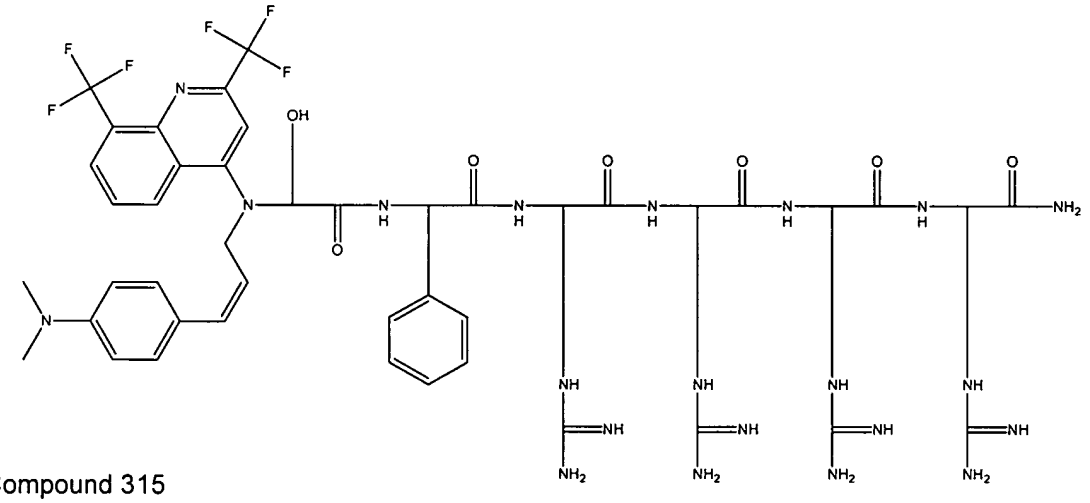
Compound 312



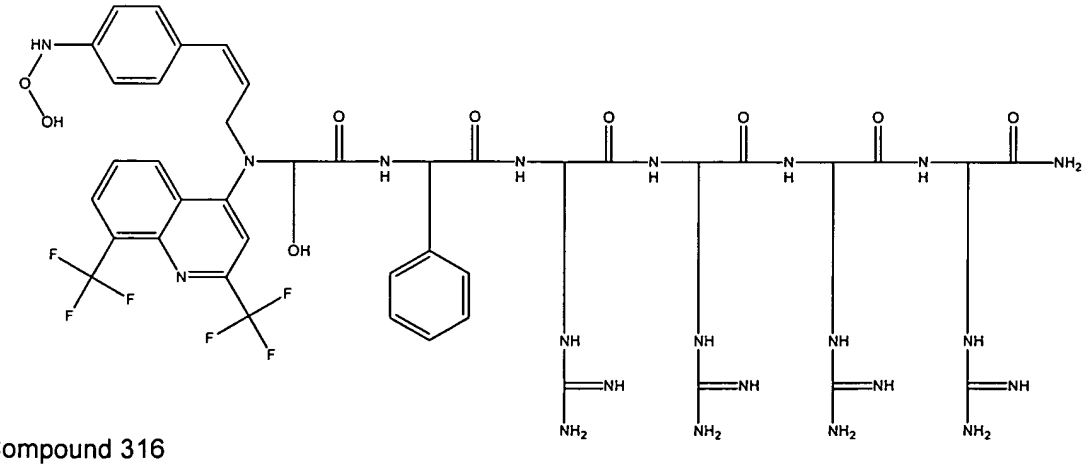
Compound 313



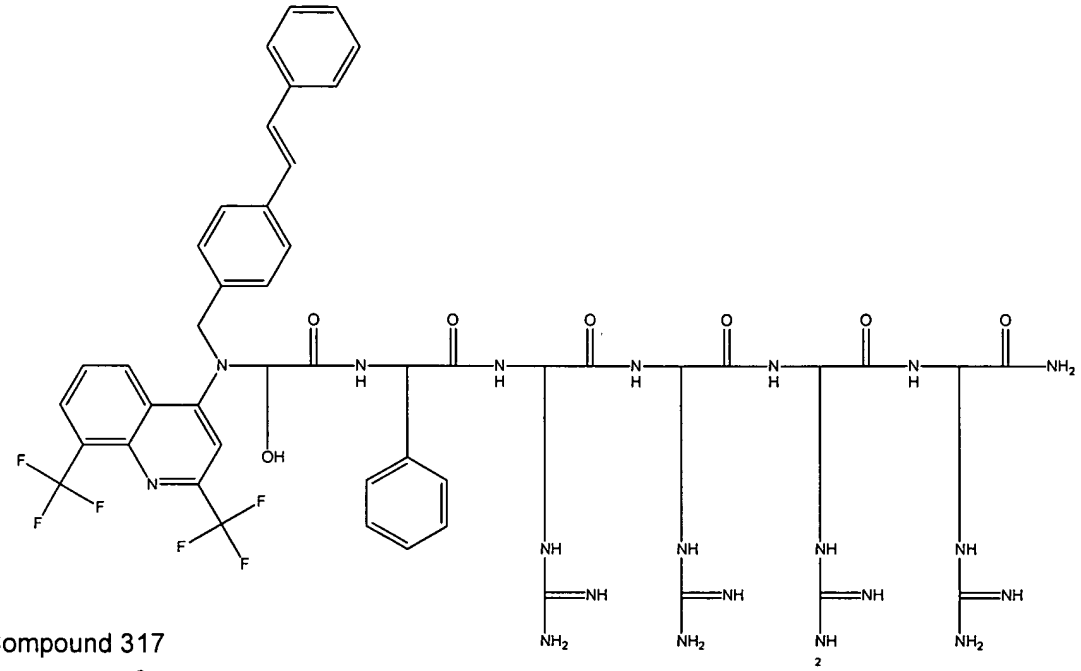
Compound 314



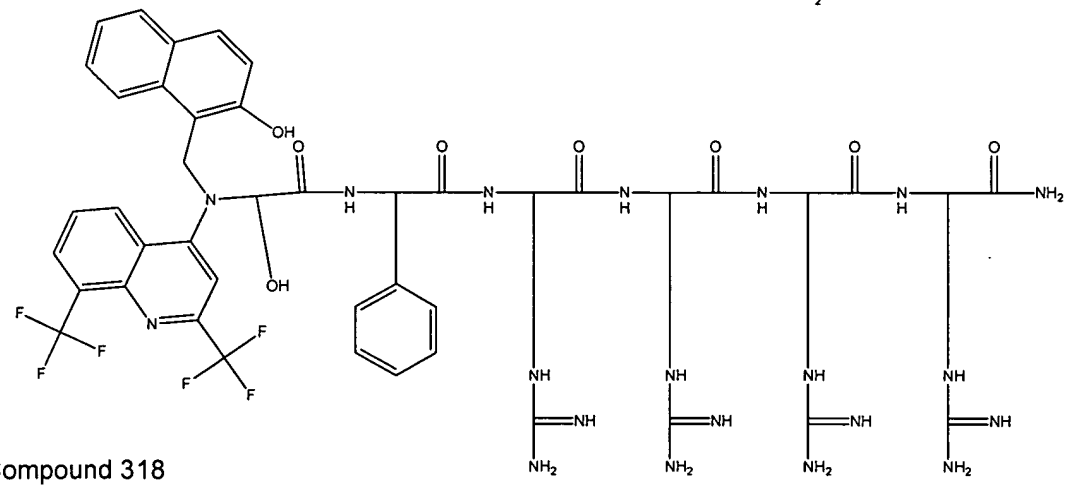
Compound 315



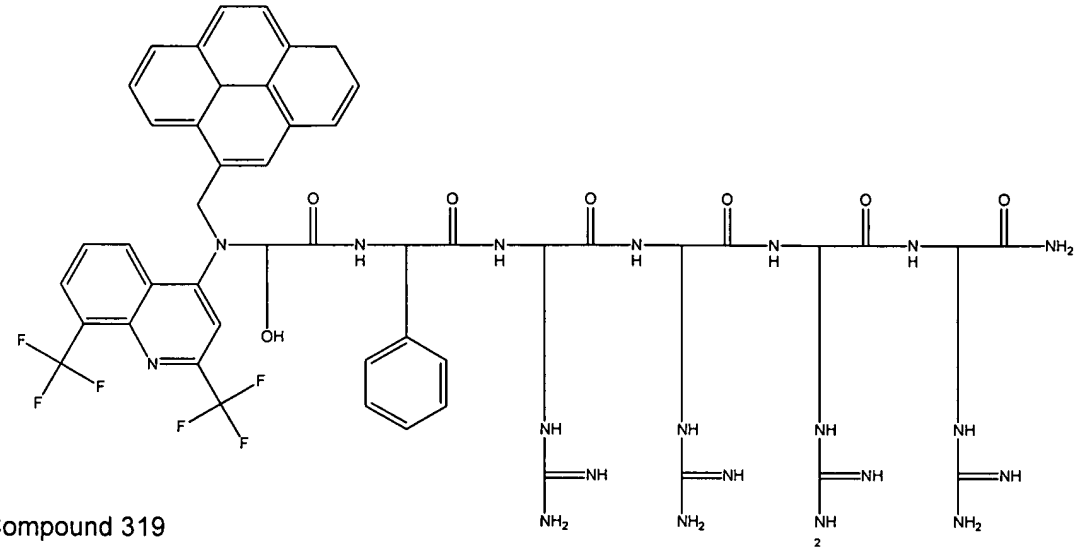
Compound 316



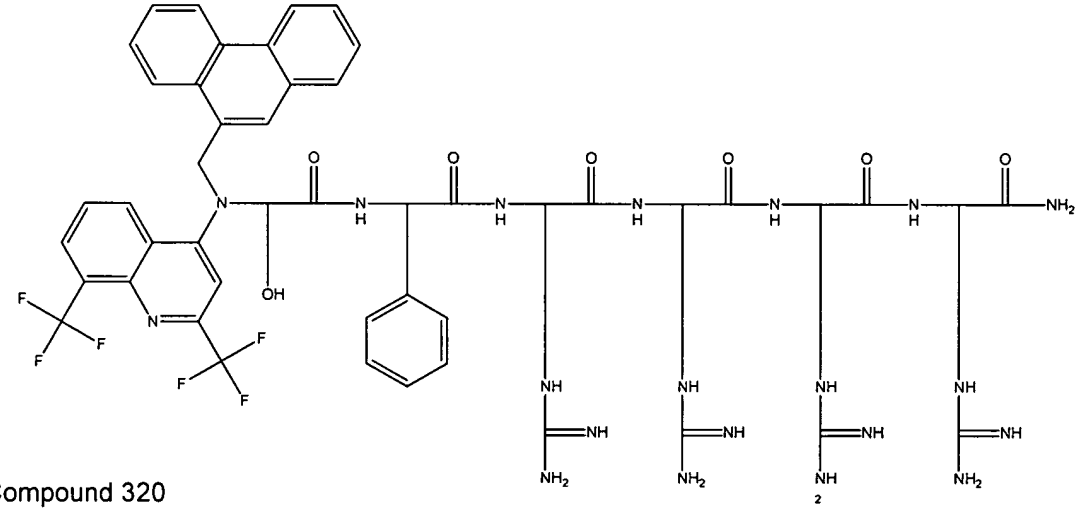
Compound 317



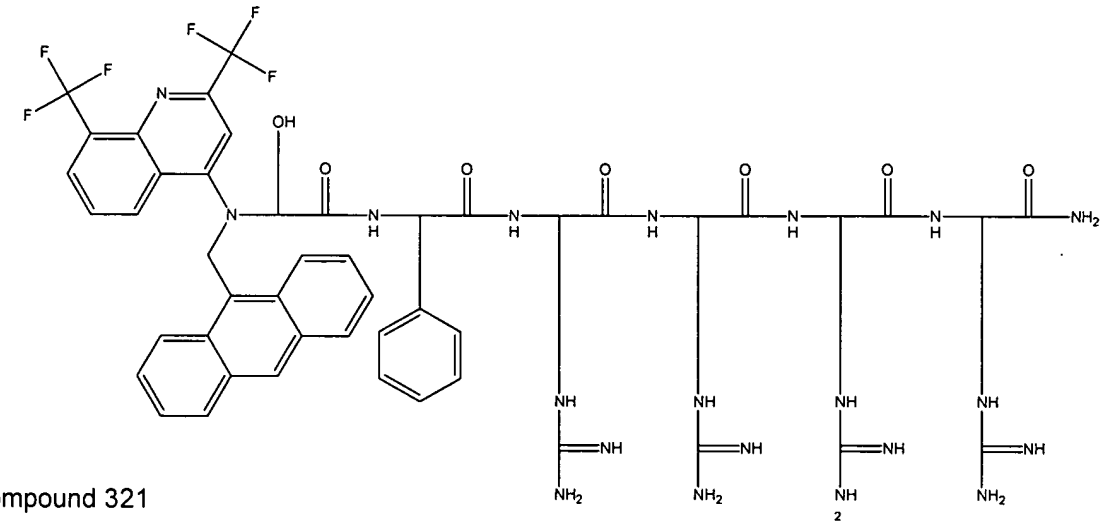
Compound 318



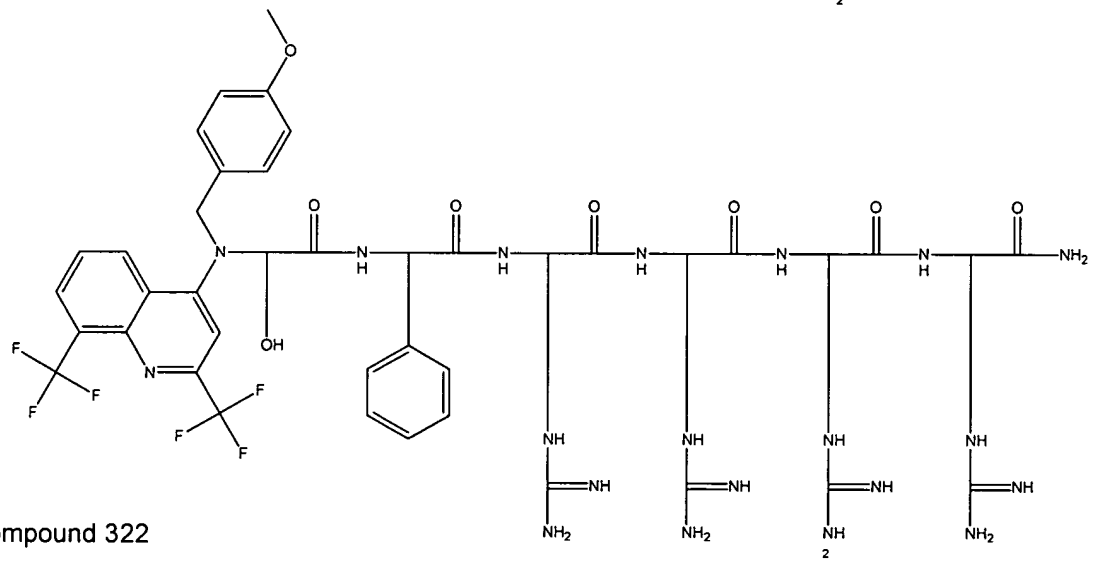
Compound 319



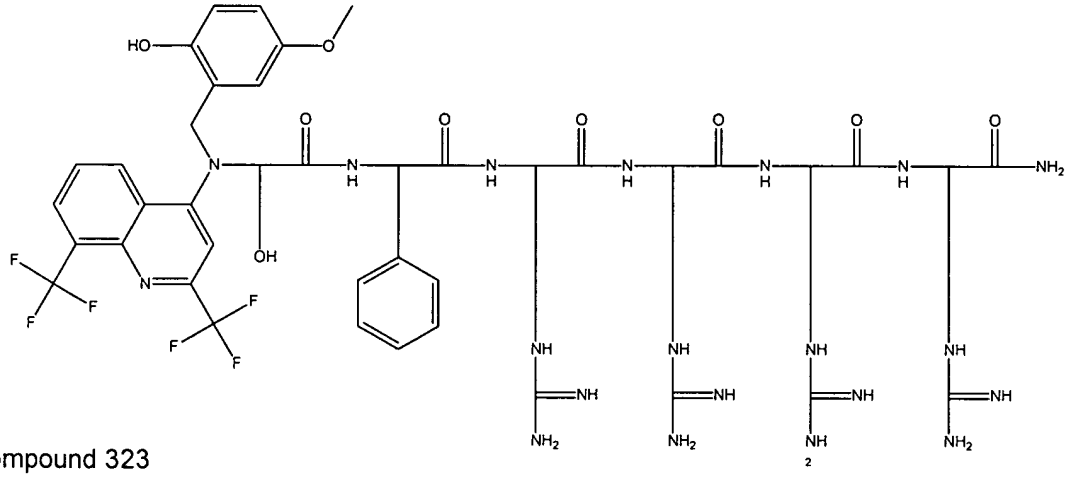
Compound 320



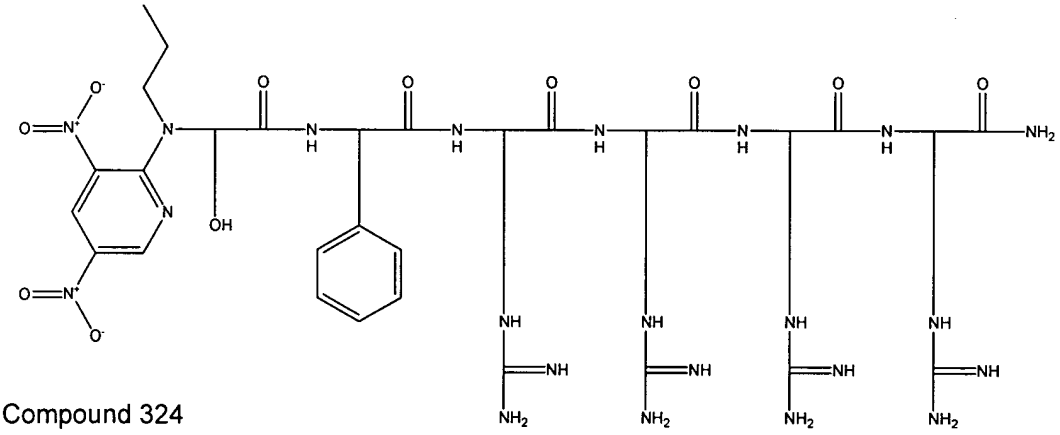
Compound 321



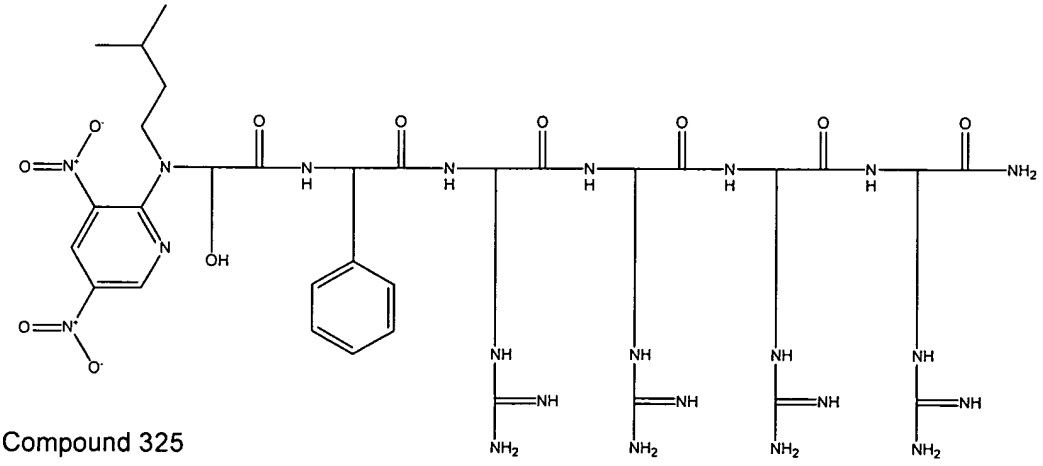
Compound 322



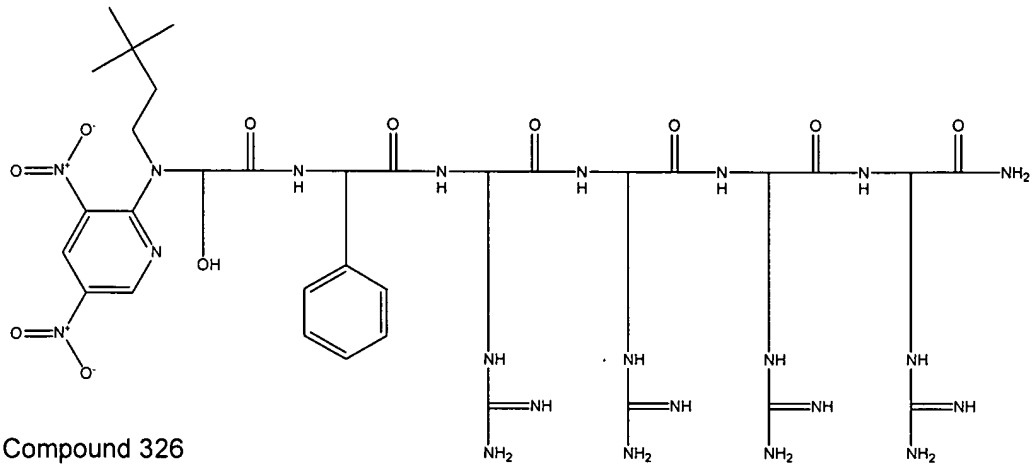
Compound 323



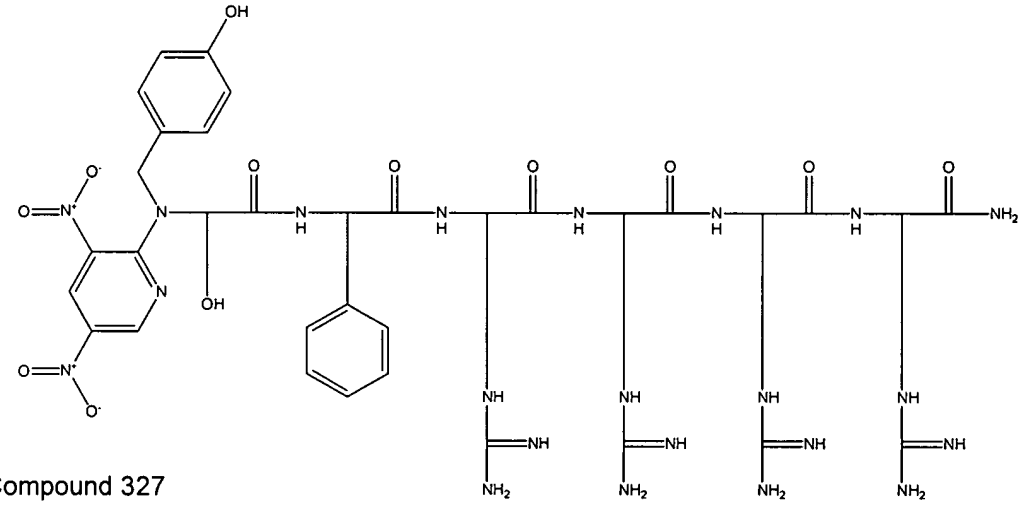
Compound 324



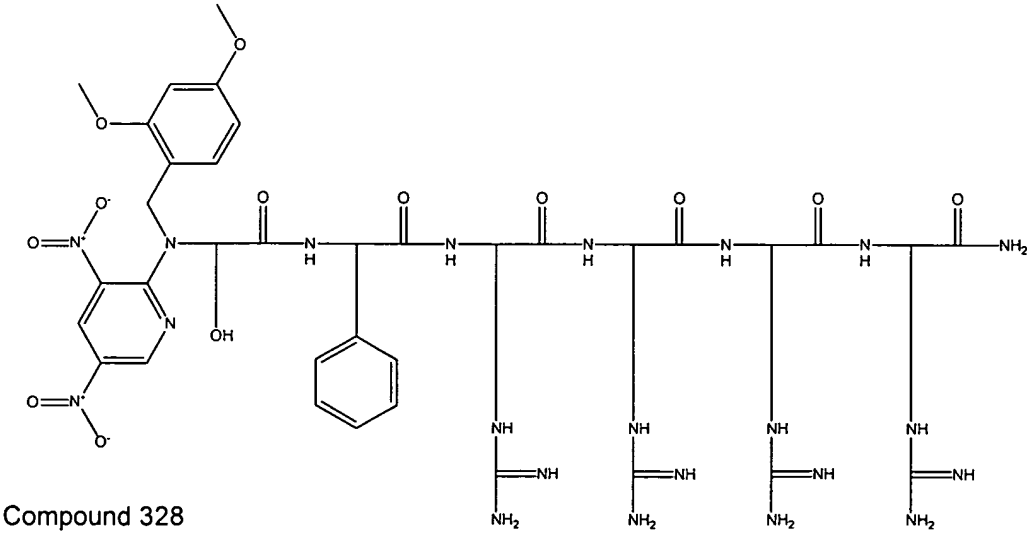
Compound 325



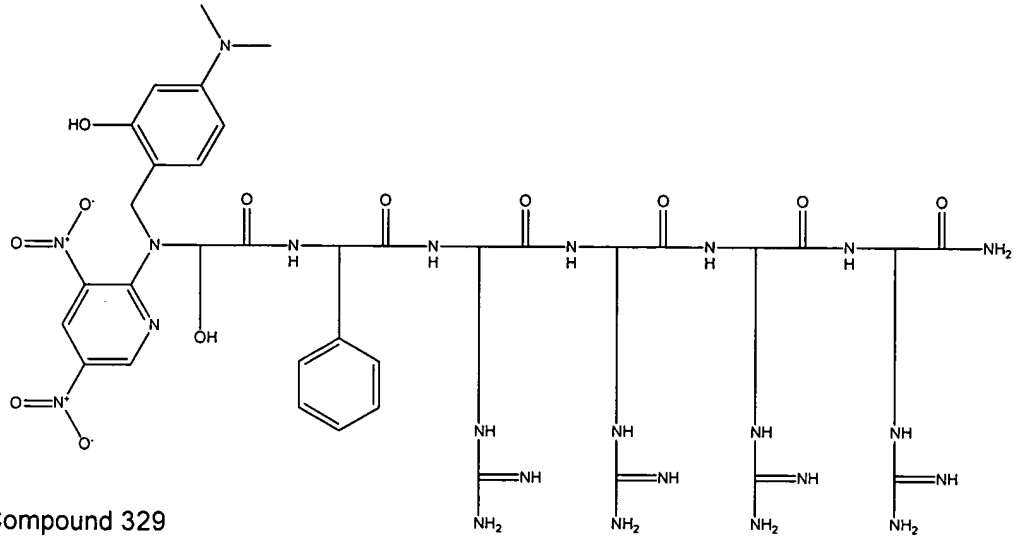
Compound 326



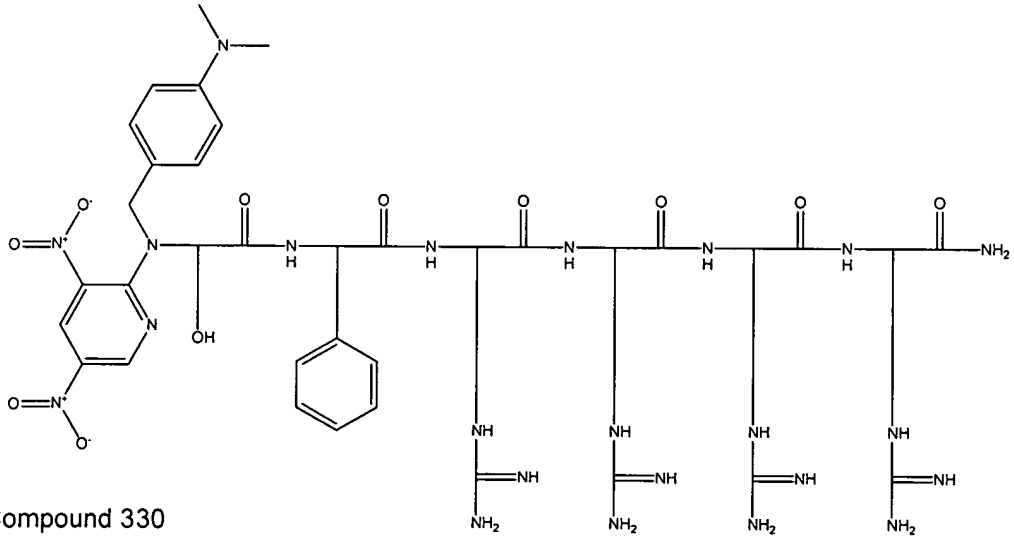
Compound 327



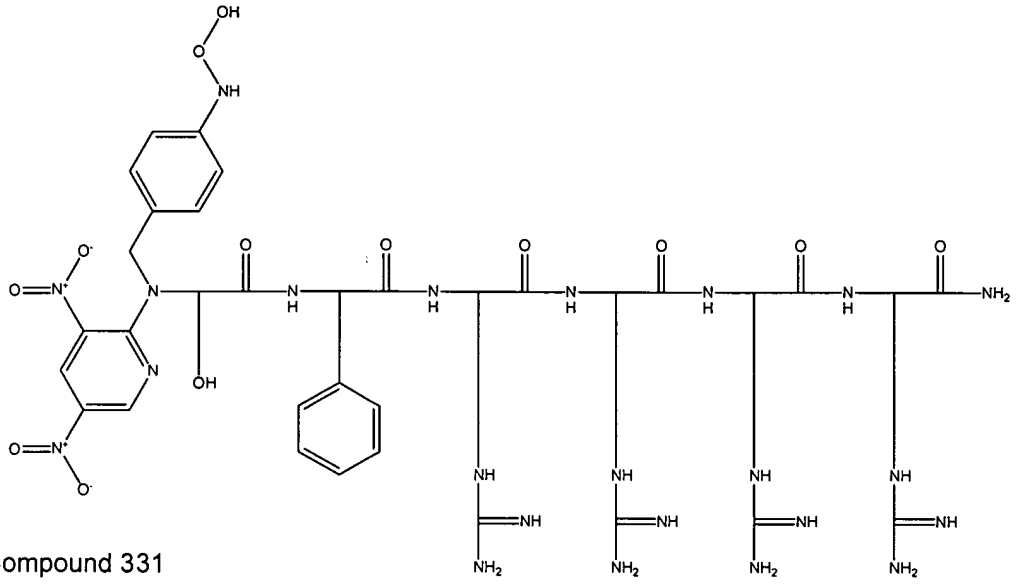
Compound 328



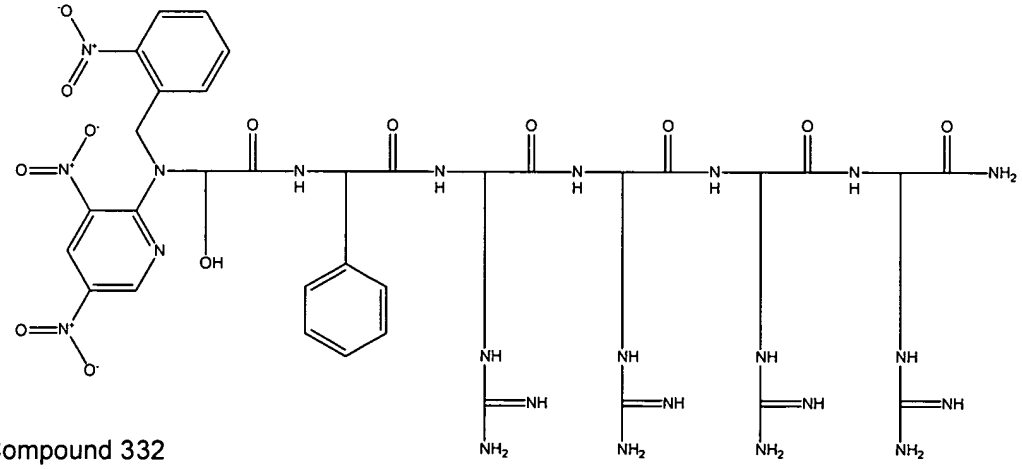
Compound 329



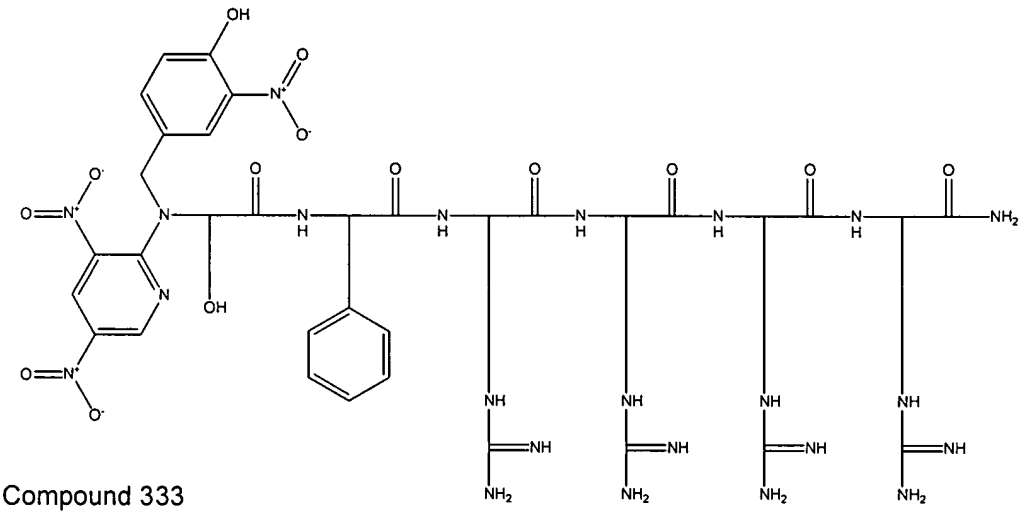
Compound 330



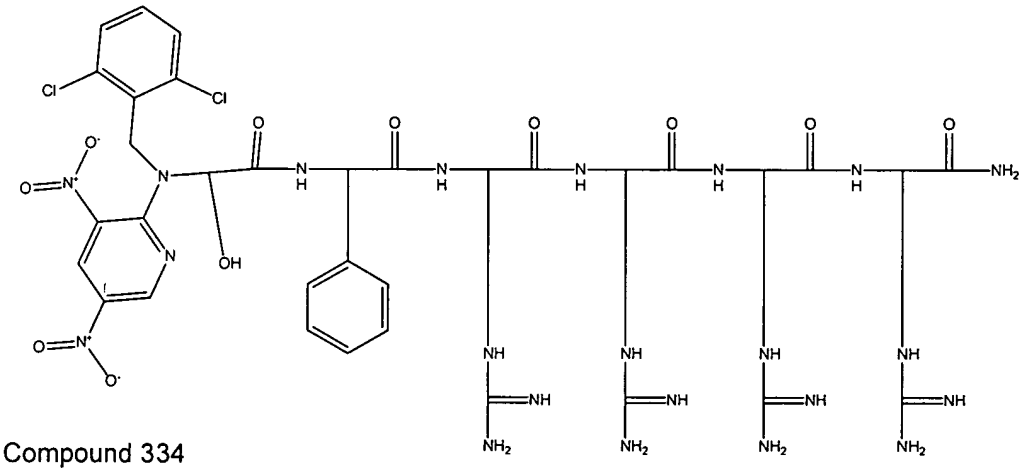
Compound 331



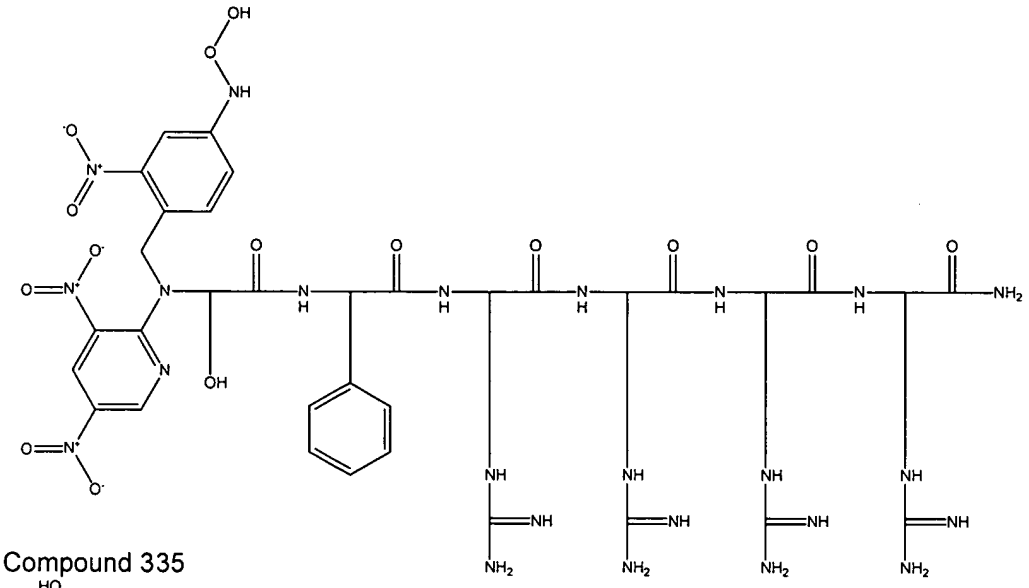
Compound 332



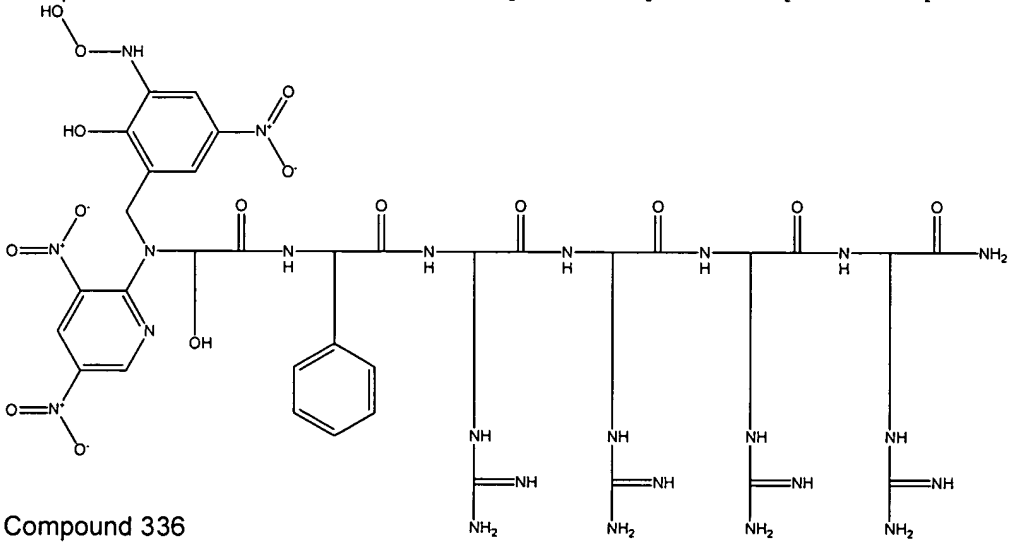
Compound 333



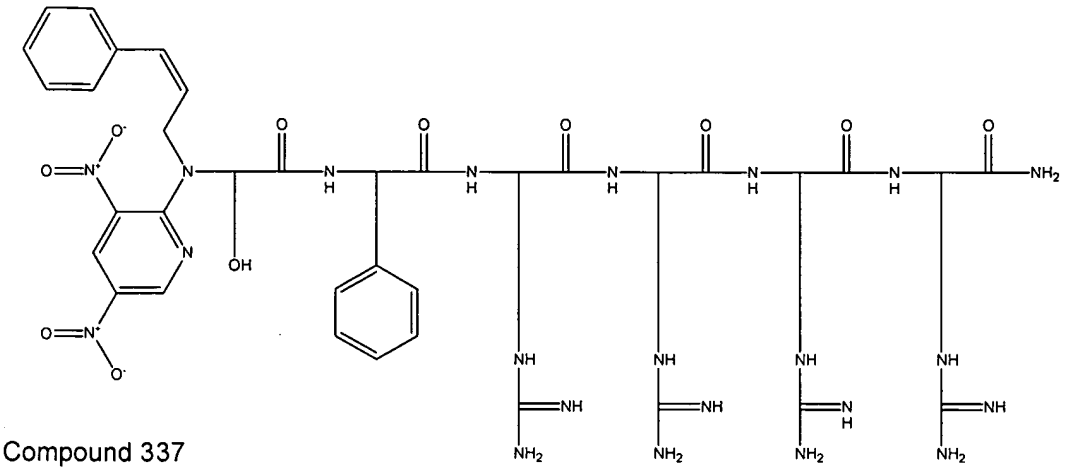
Compound 334



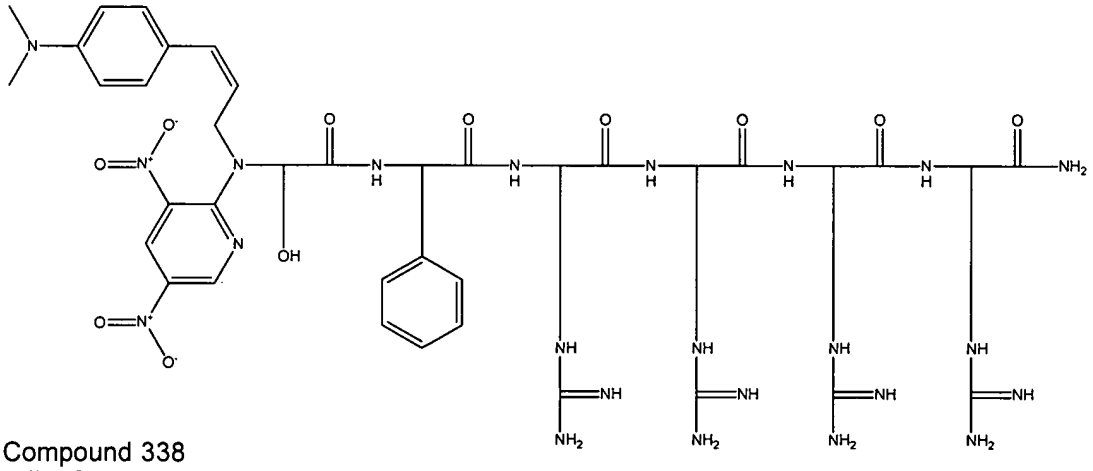
Compound 335



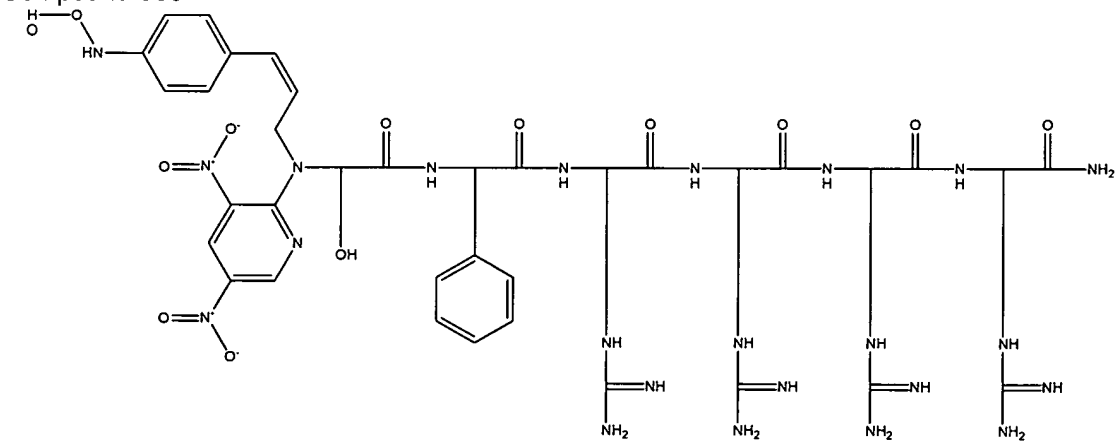
Compound 336



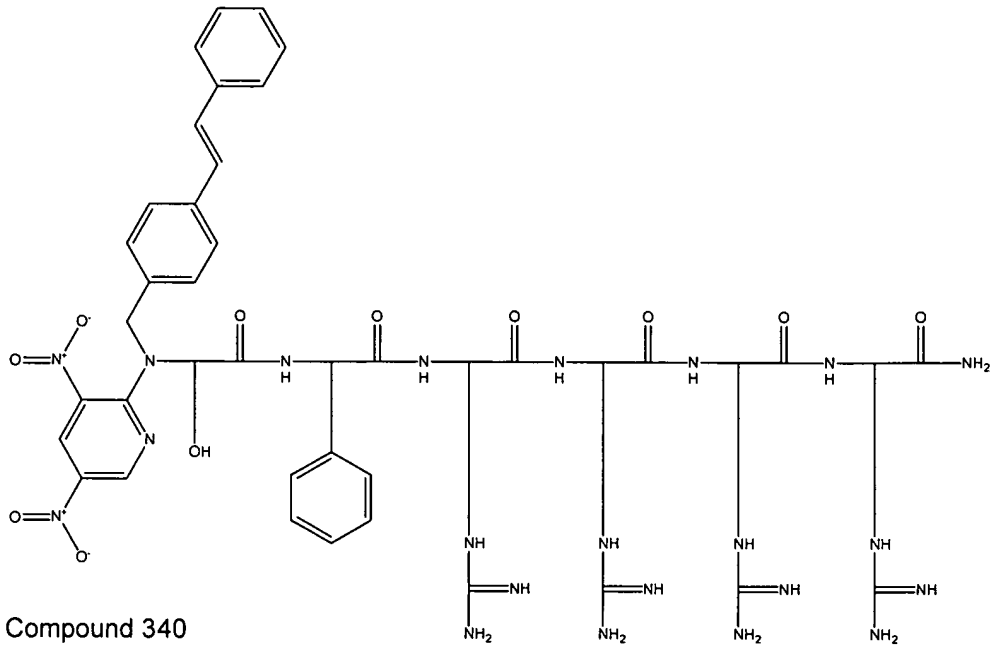
Compound 337



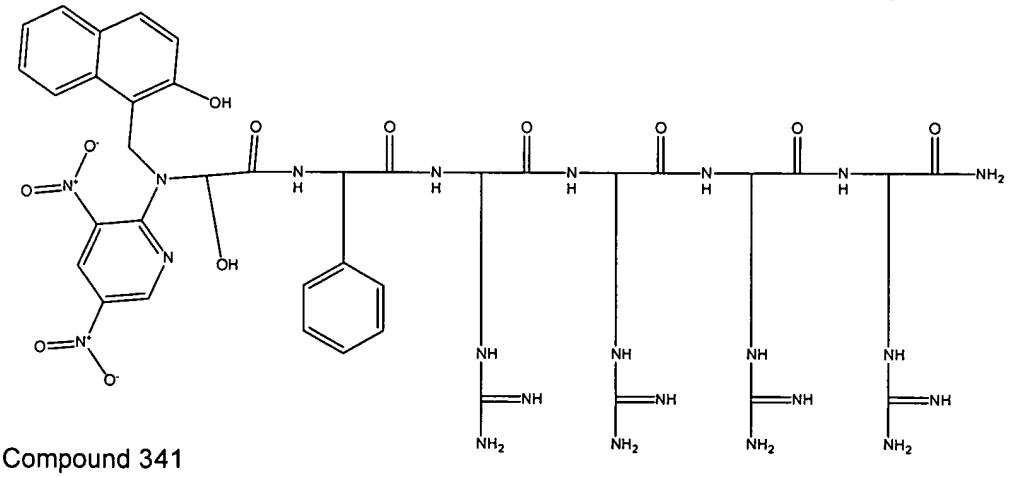
Compound 338



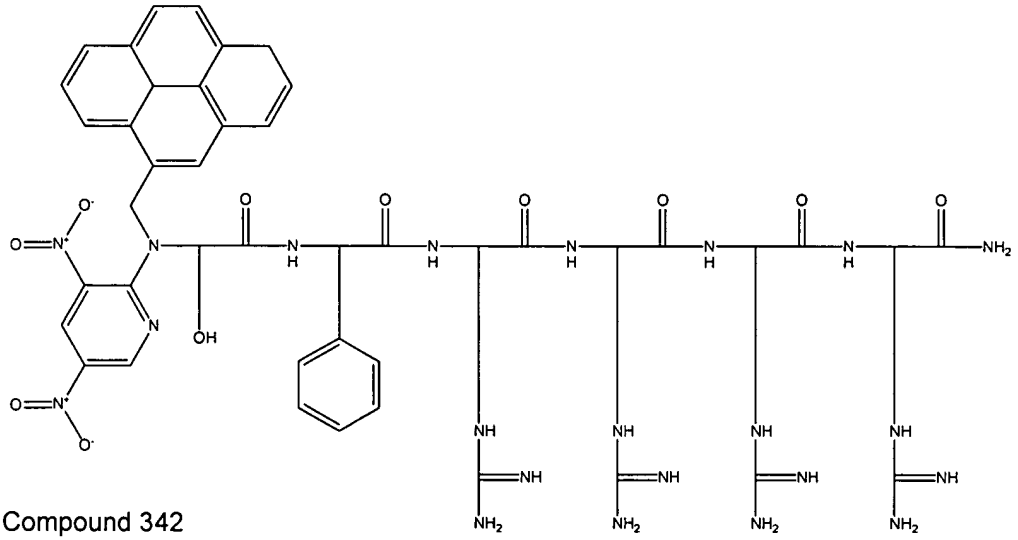
Compound 339



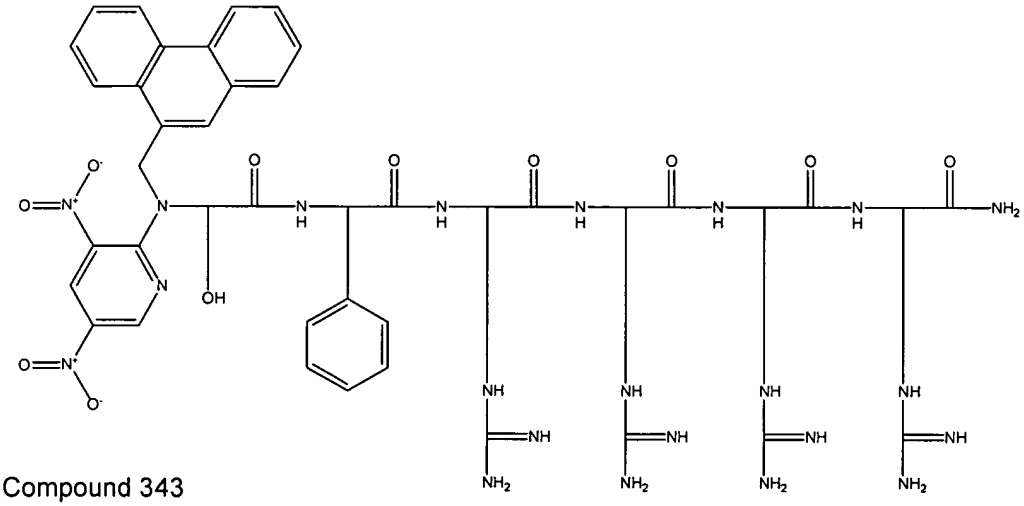
Compound 340



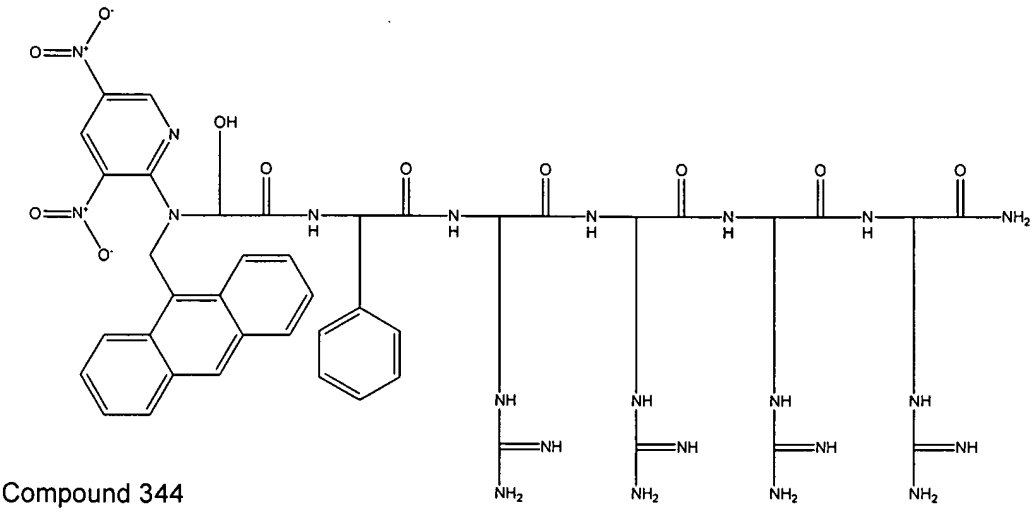
Compound 341



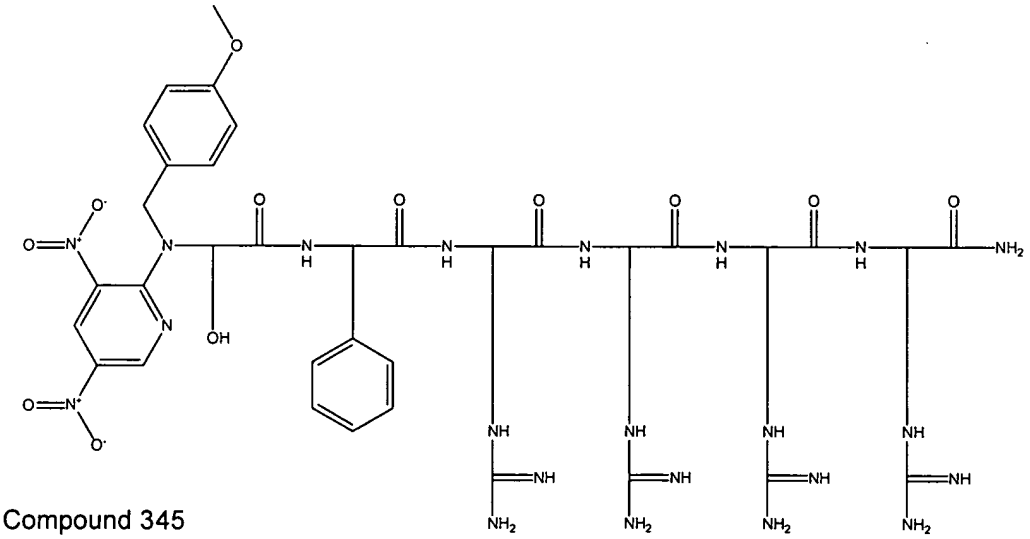
Compound 342



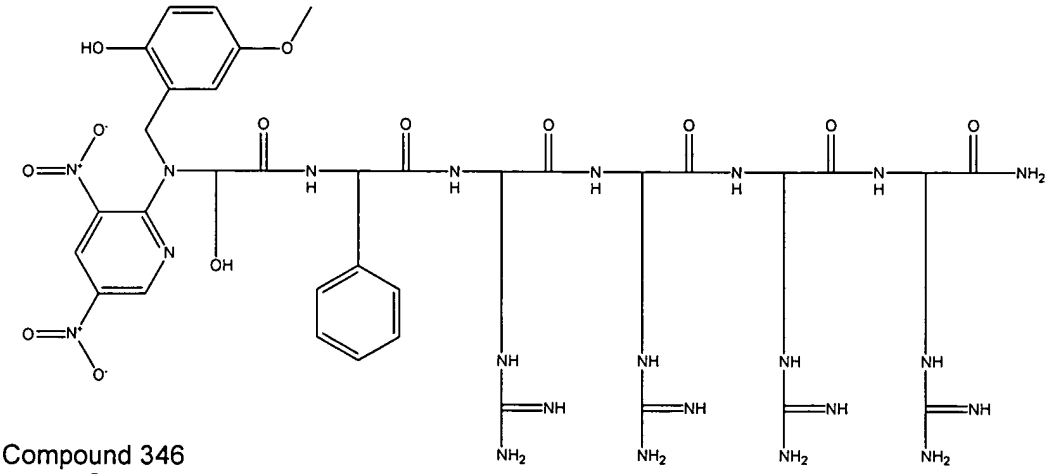
Compound 343



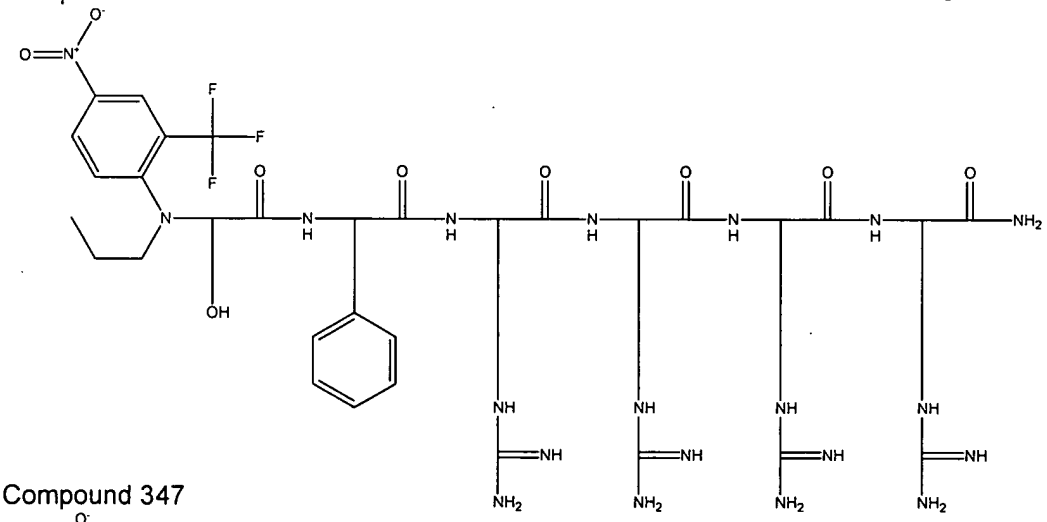
Compound 344



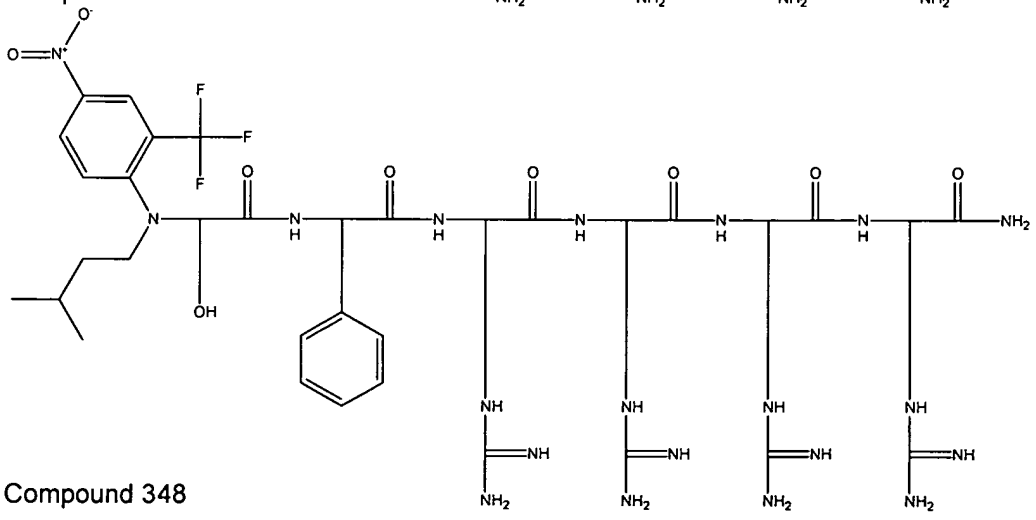
Compound 345



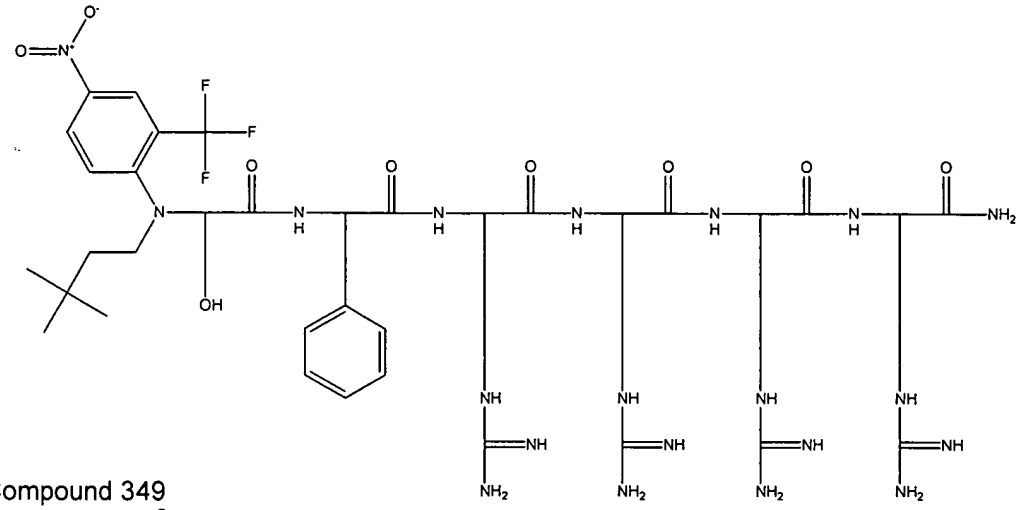
Compound 346



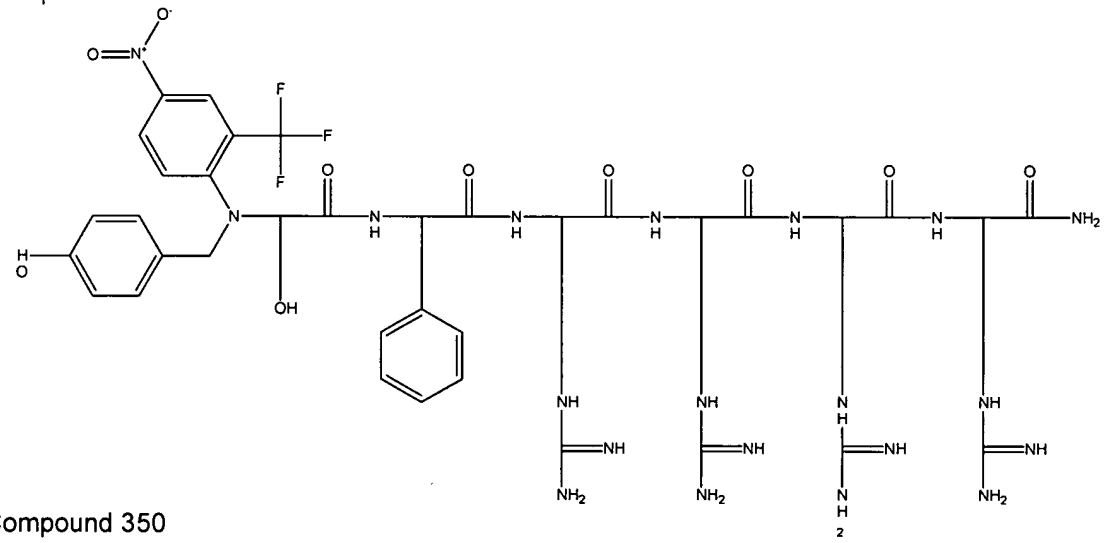
Compound 347



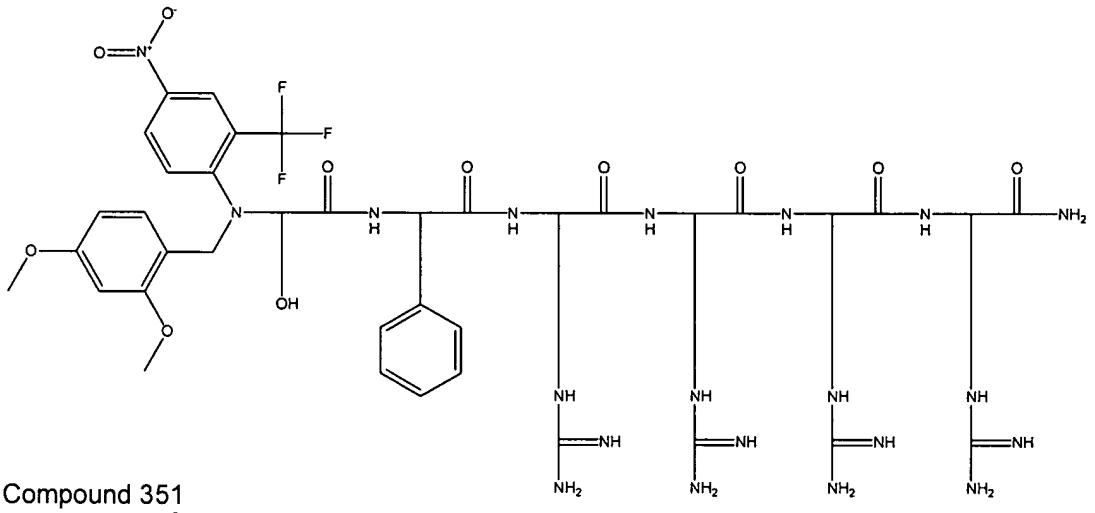
Compound 348



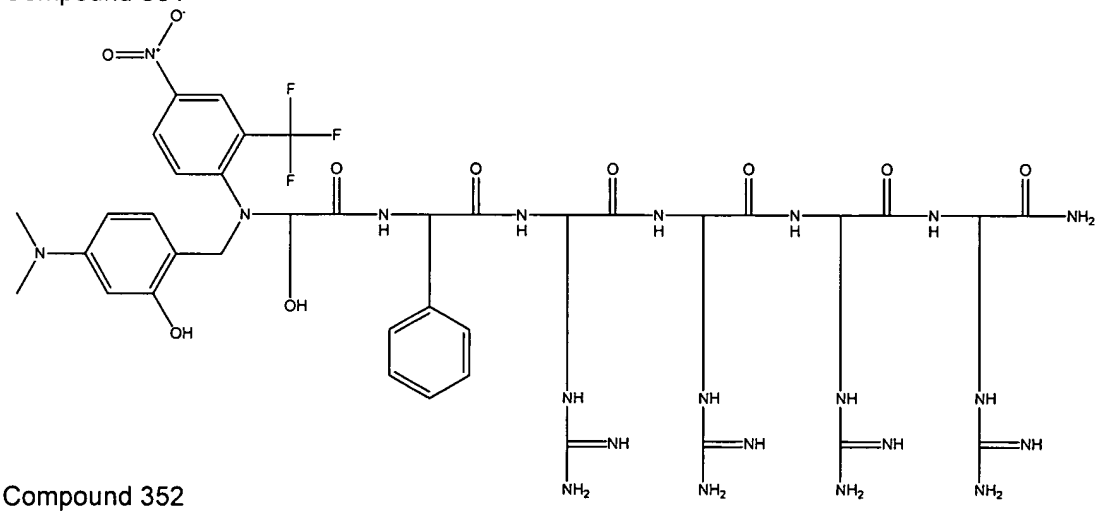
Compound 349



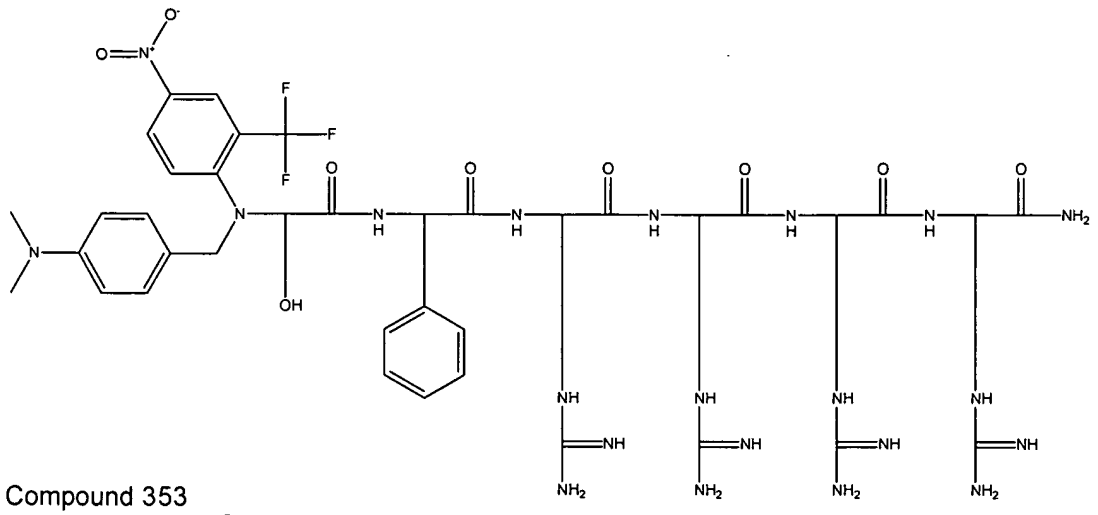
Compound 350



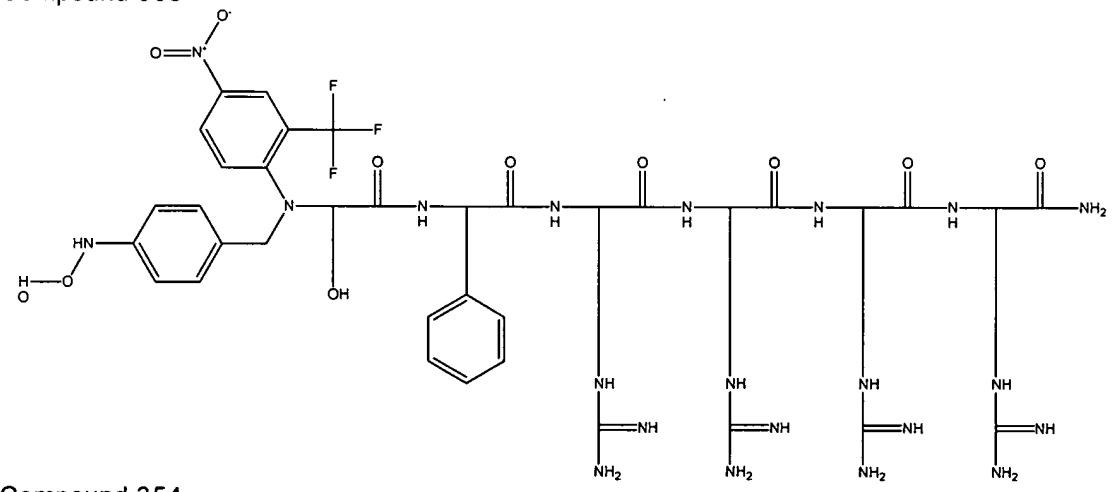
Compound 351



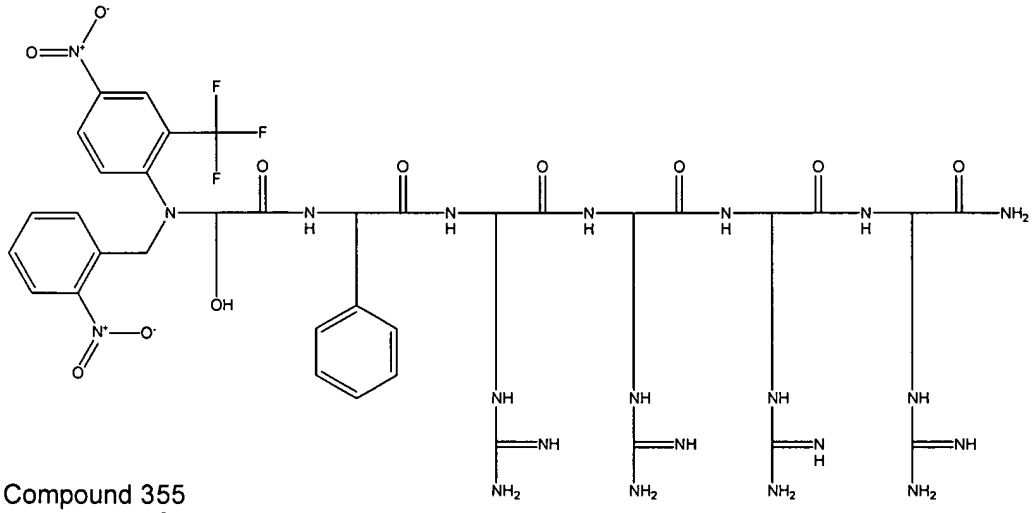
Compound 352



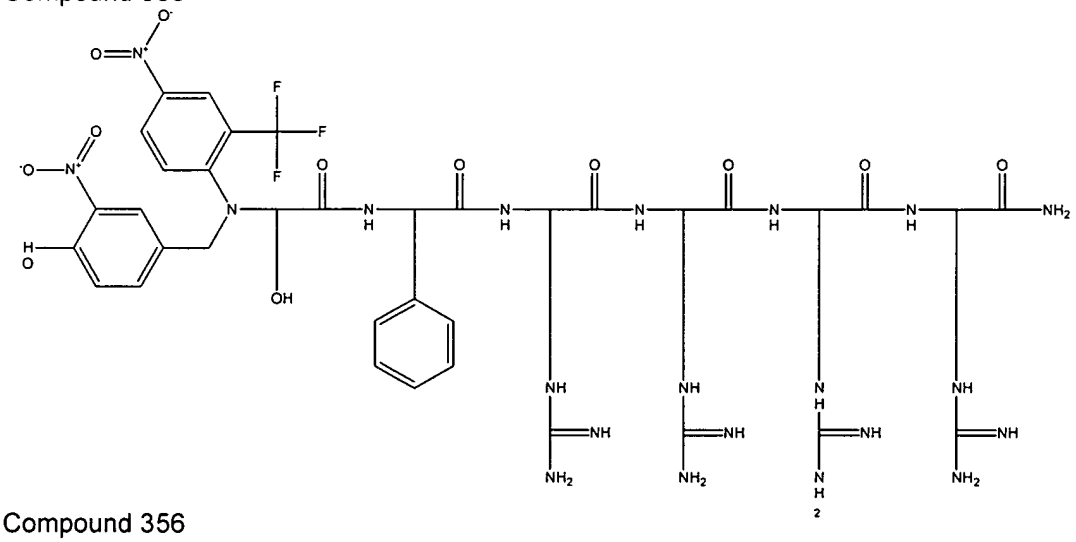
Compound 353



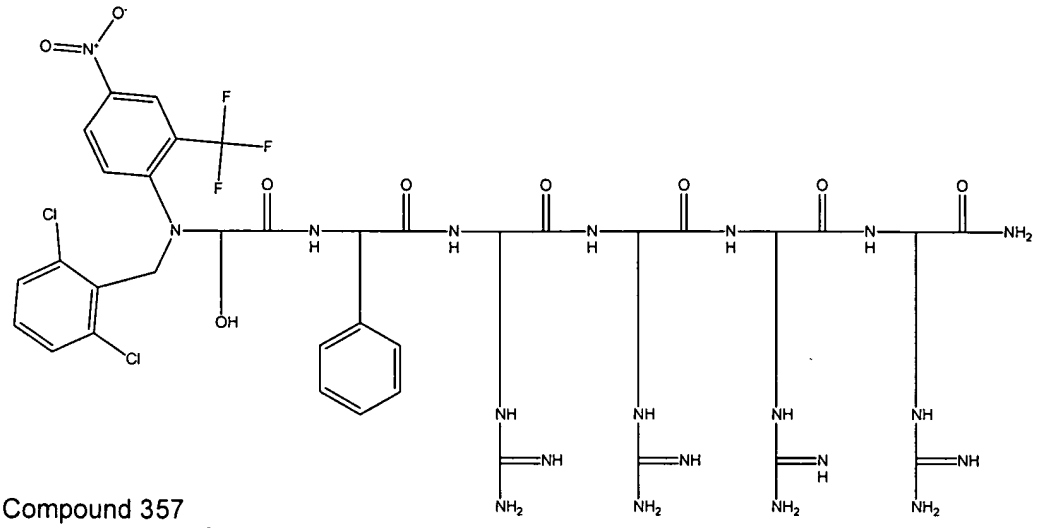
Compound 354



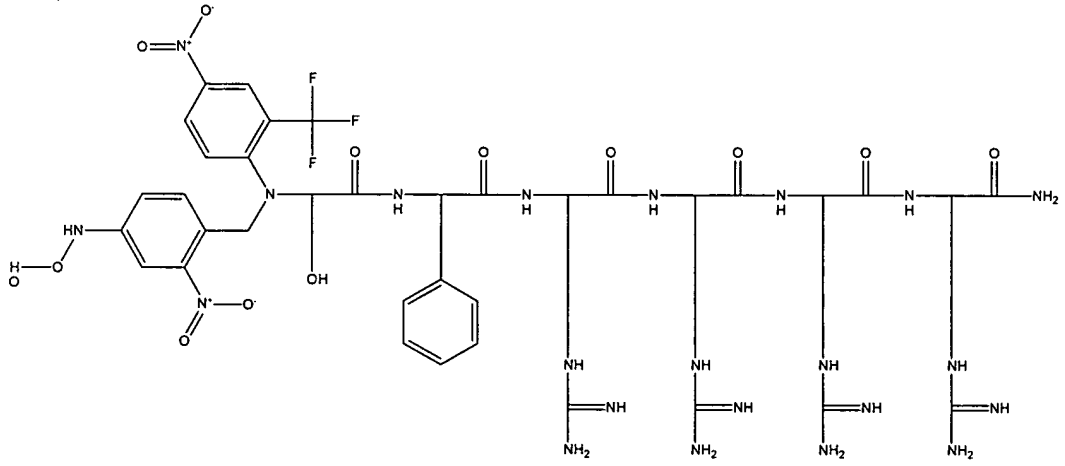
Compound 355



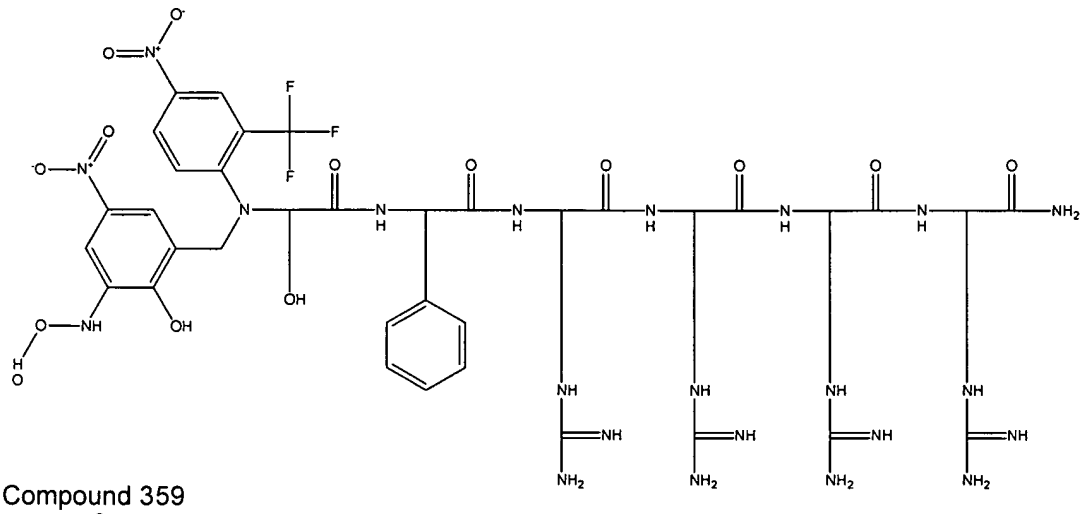
Compound 356



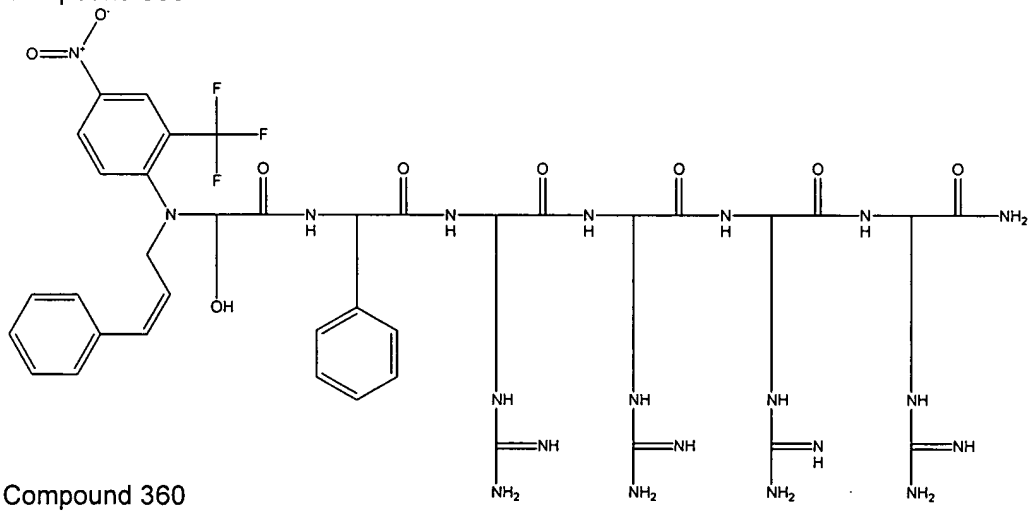
Compound 357



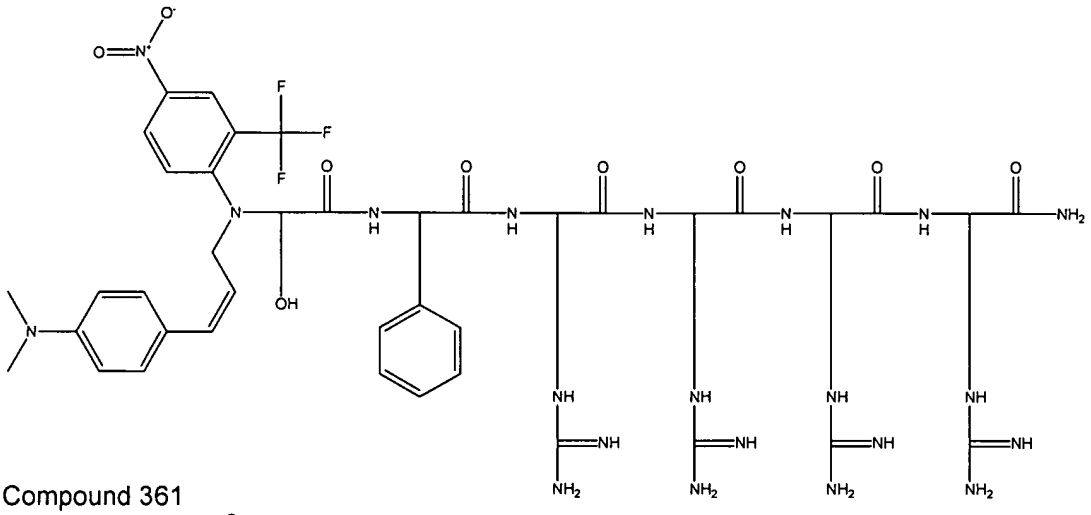
Compound 358



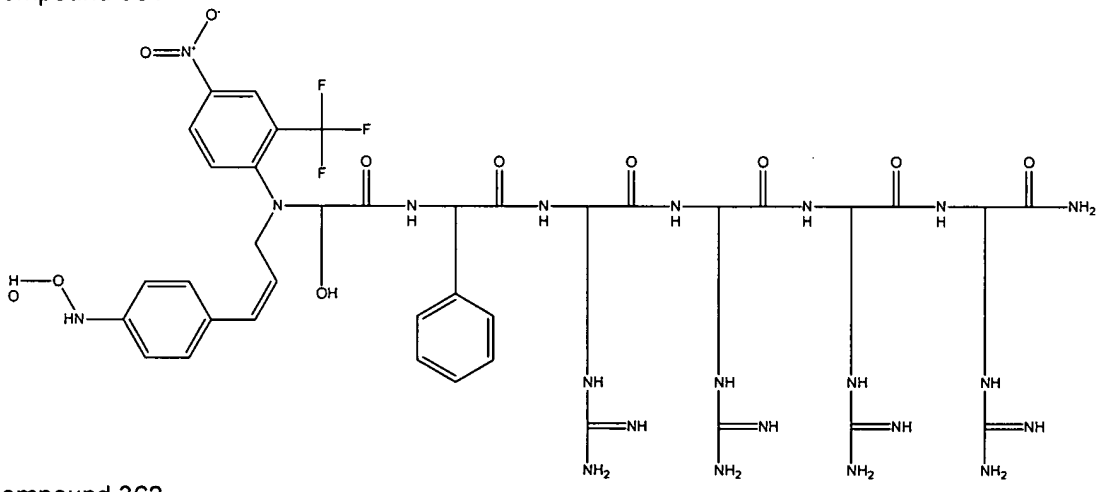
Compound 359



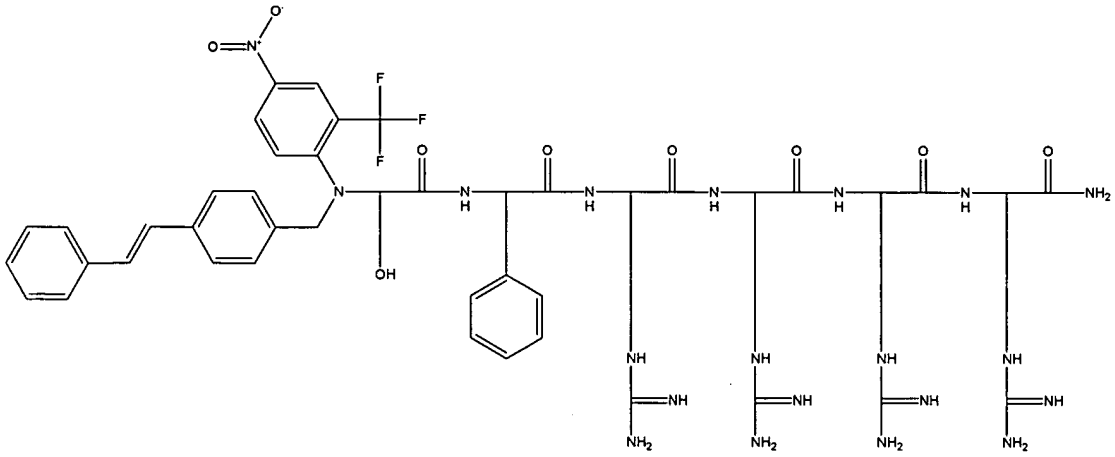
Compound 360



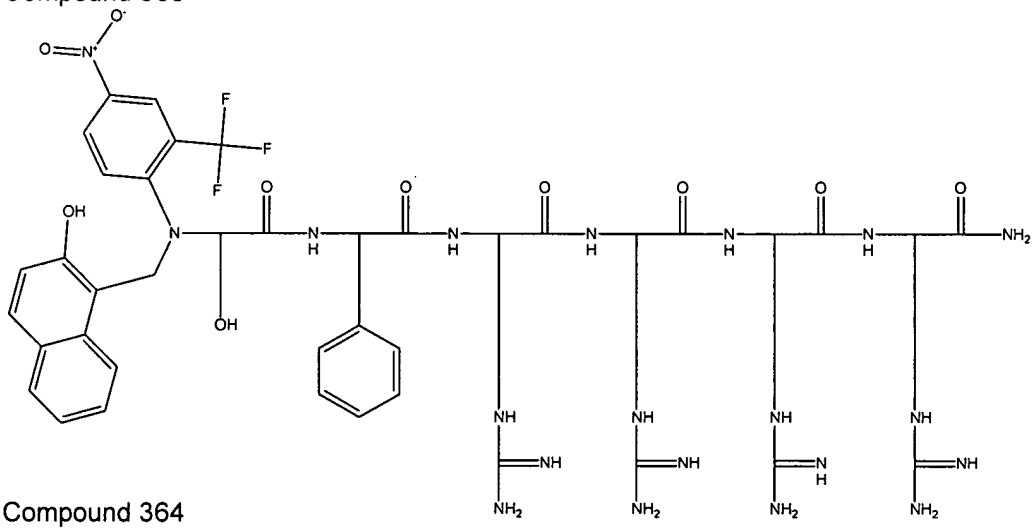
Compound 361



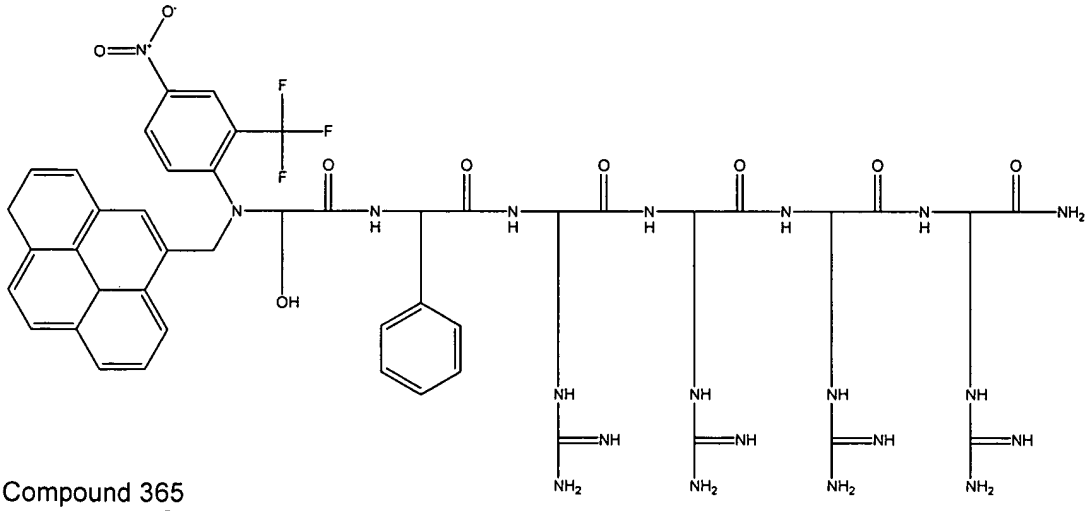
Compound 362



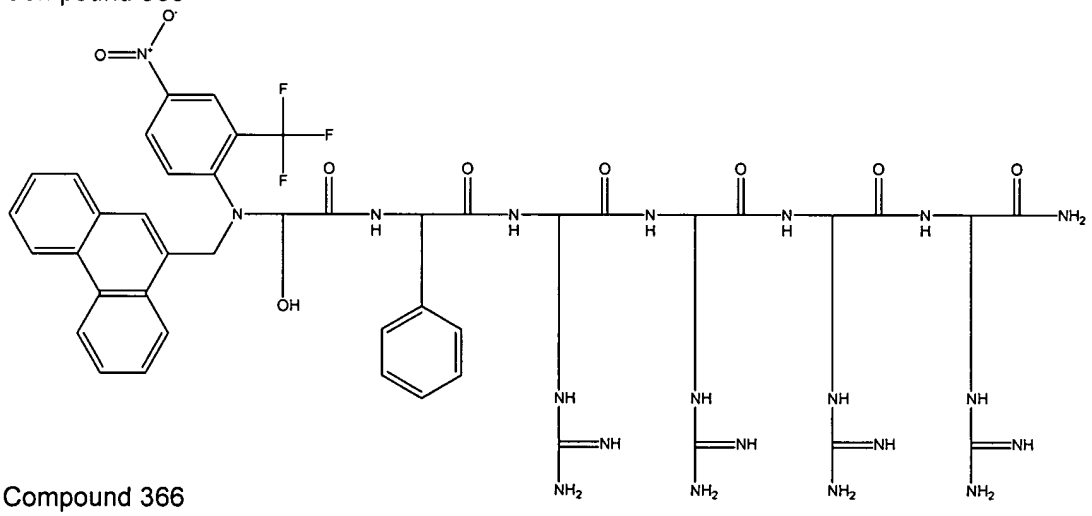
Compound 363



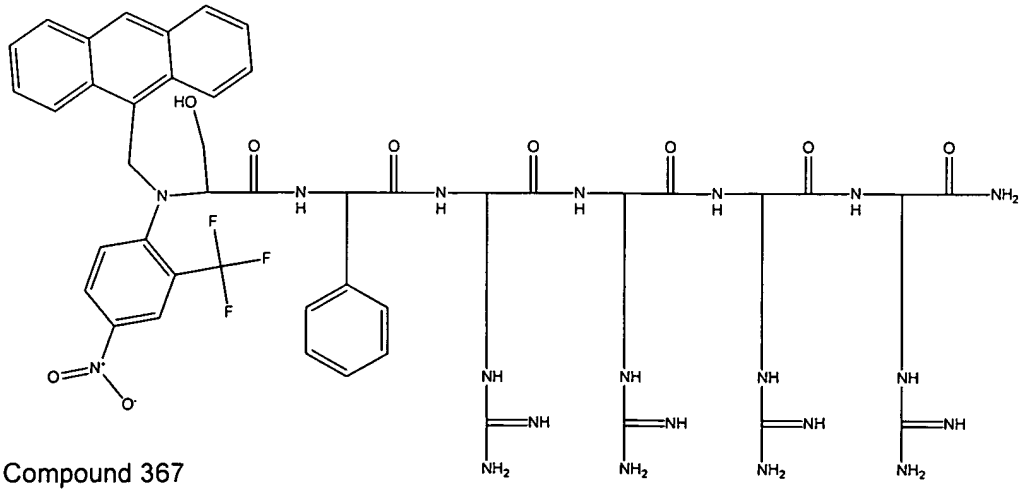
Compound 364



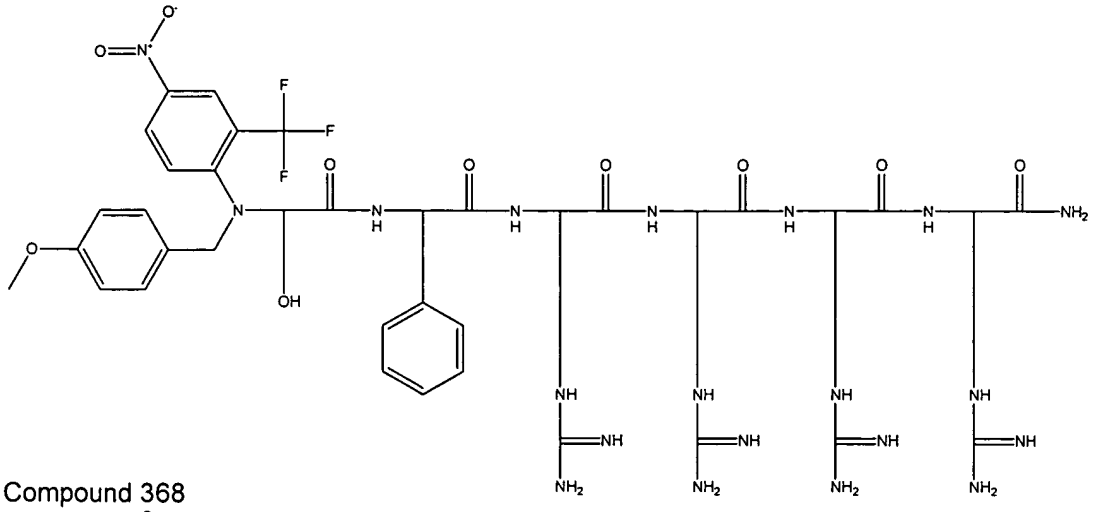
Compound 365



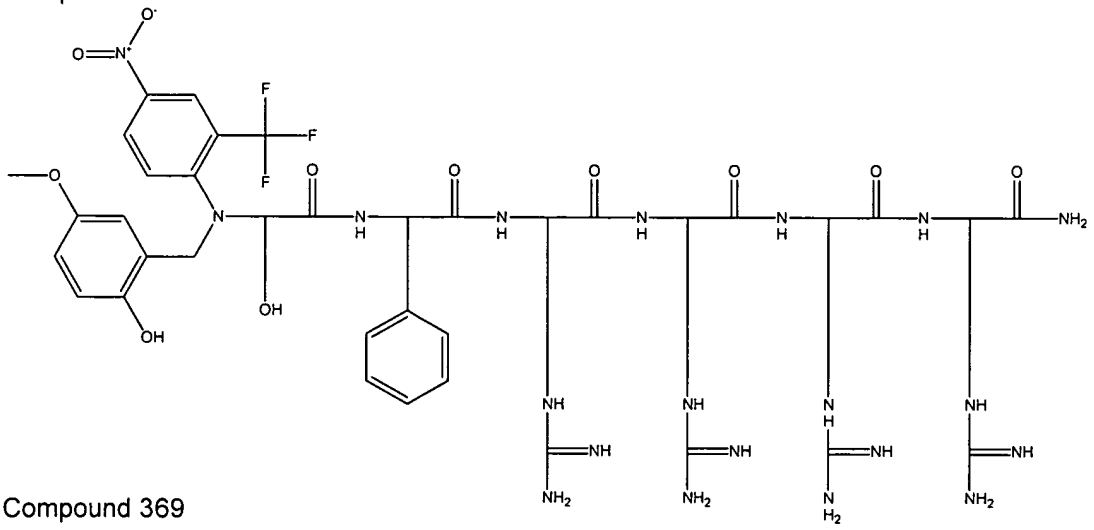
Compound 366



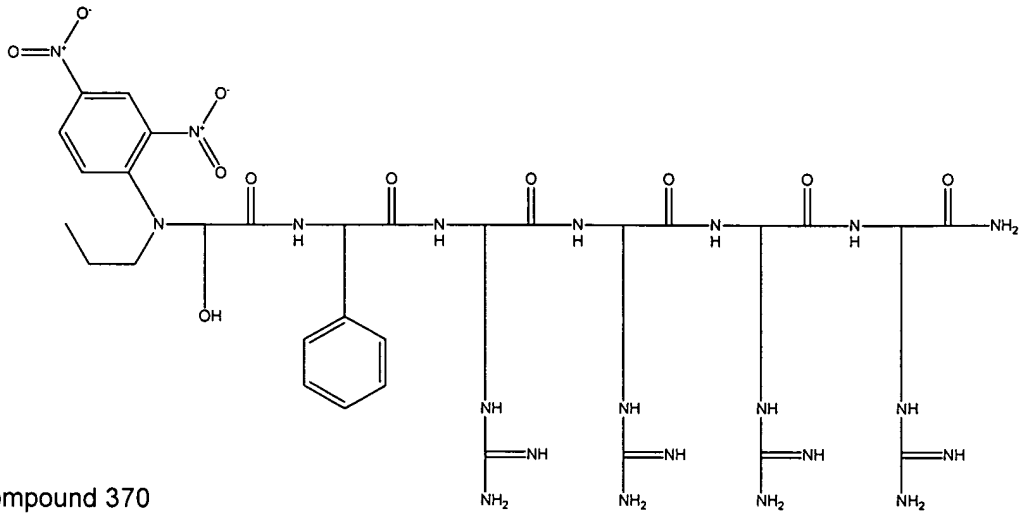
Compound 367



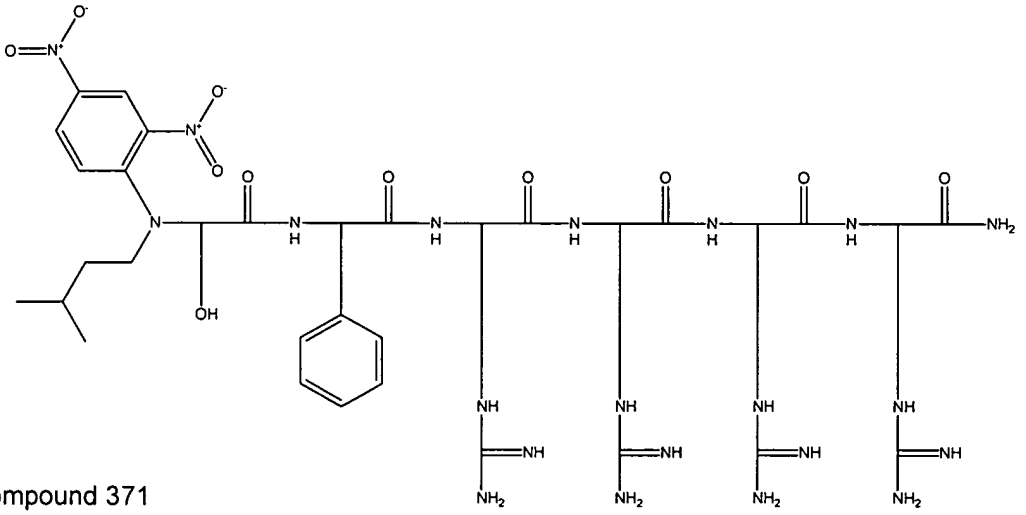
Compound 368



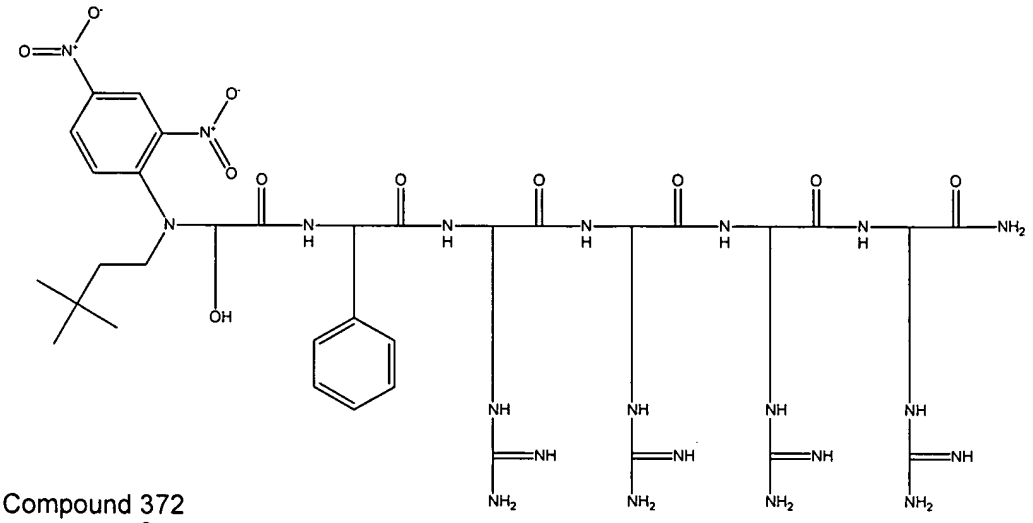
Compound 369



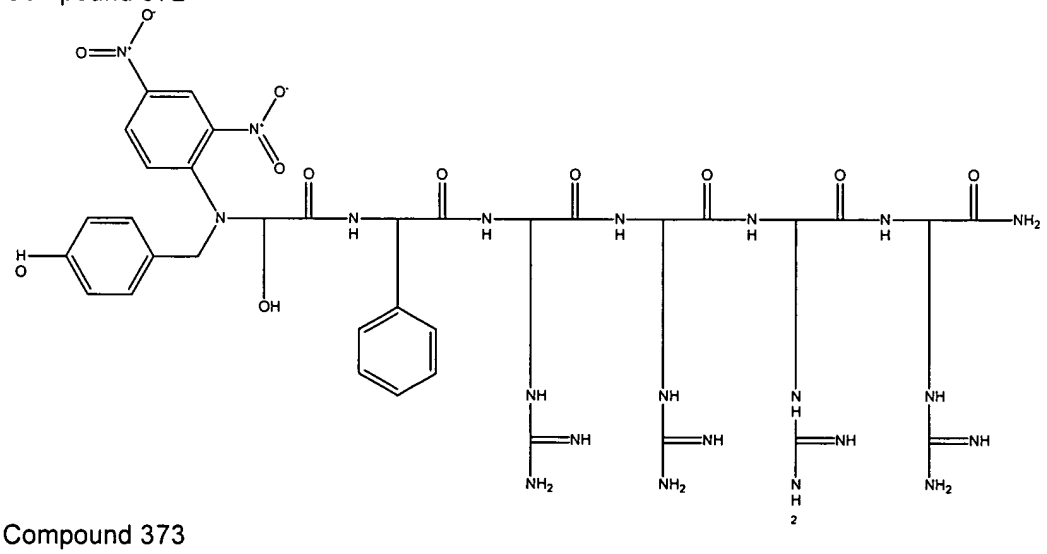
Compound 370



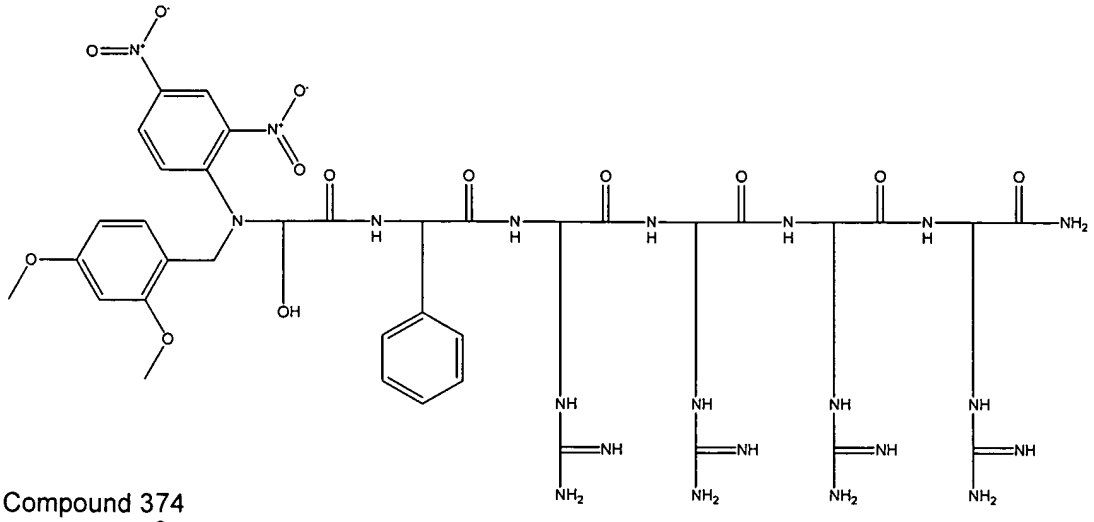
Compound 371



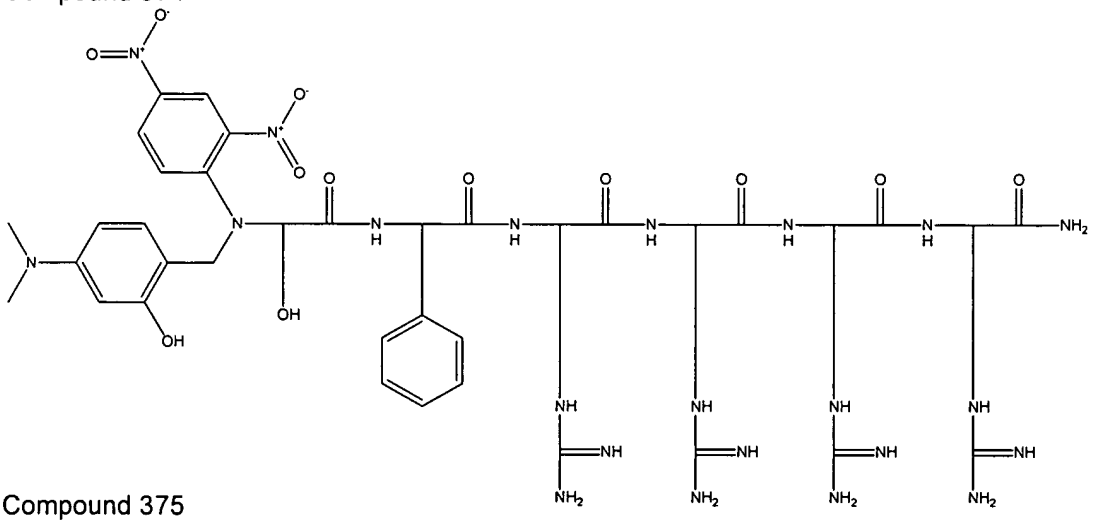
Compound 372



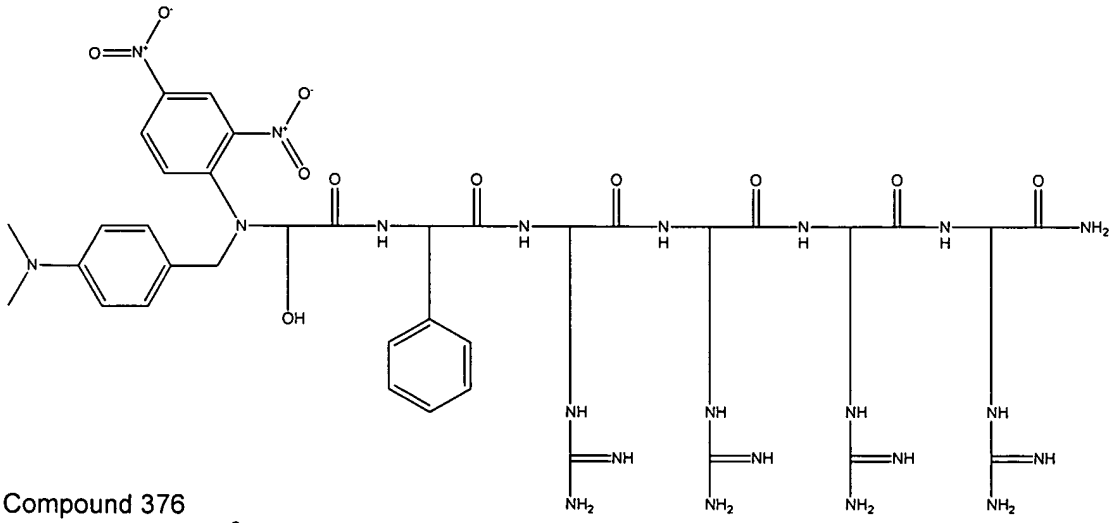
Compound 373



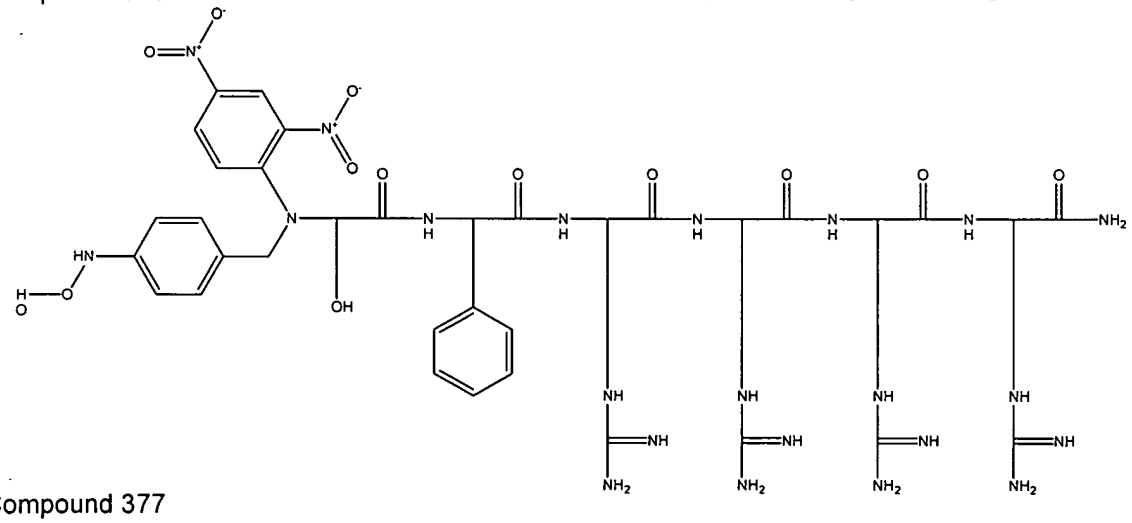
Compound 374



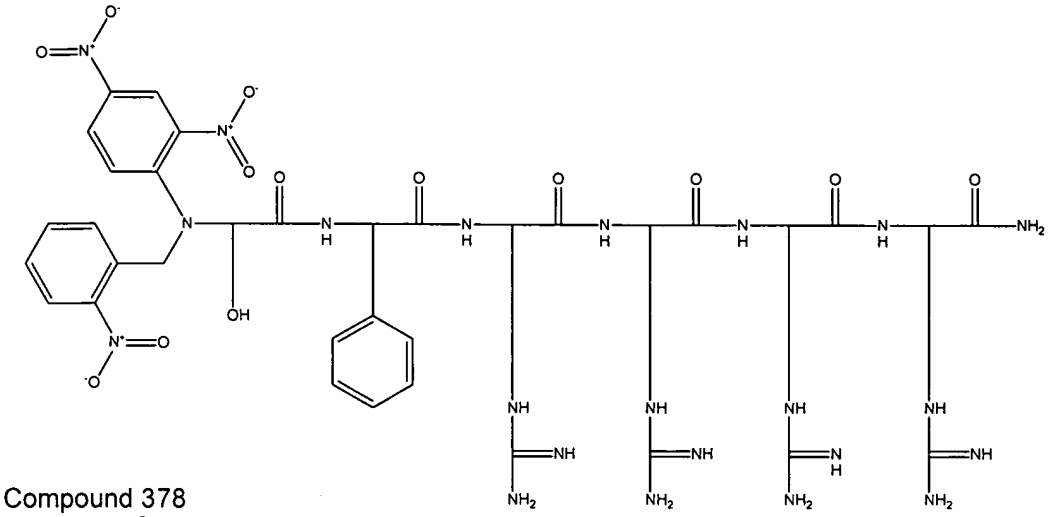
Compound 375



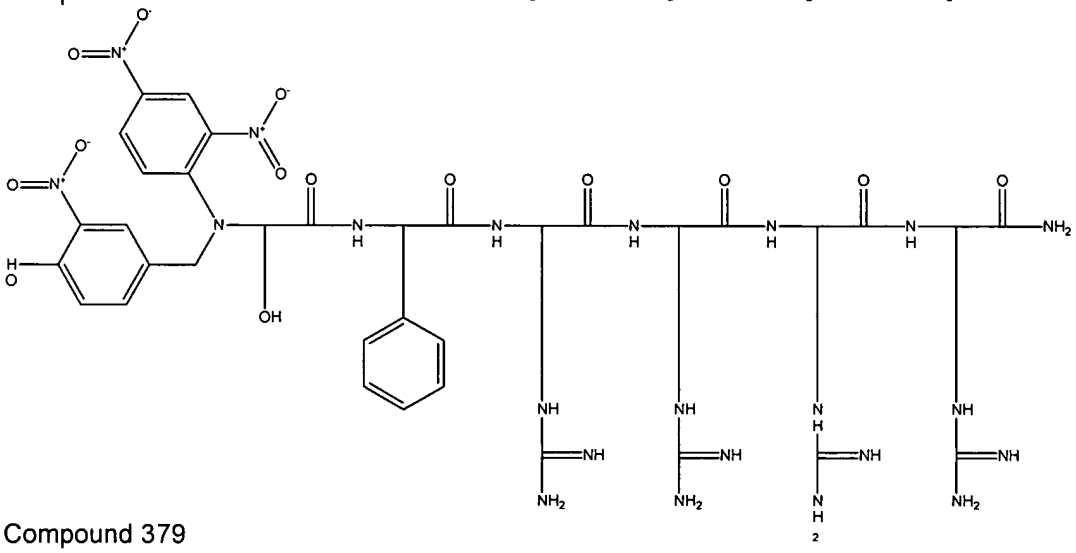
Compound 376



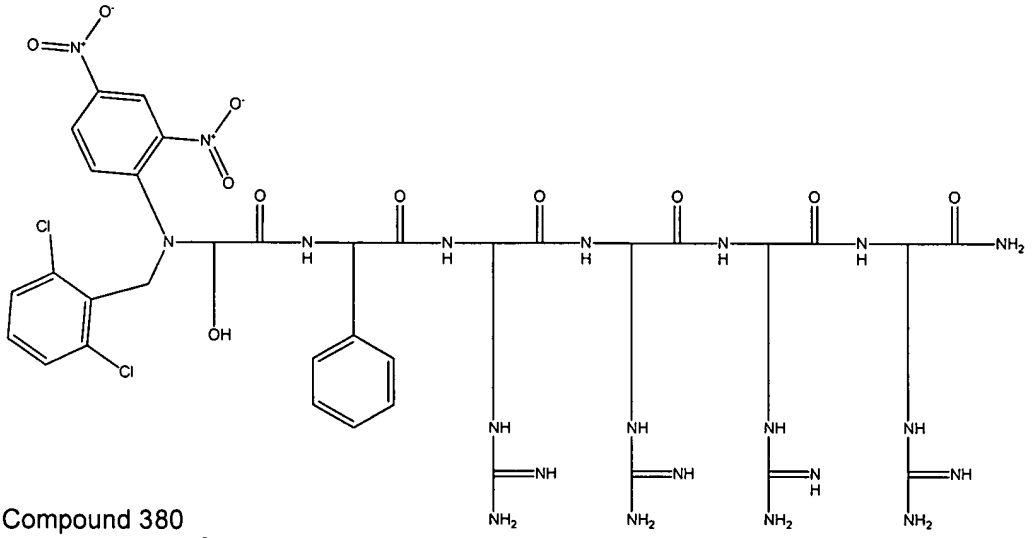
Compound 377



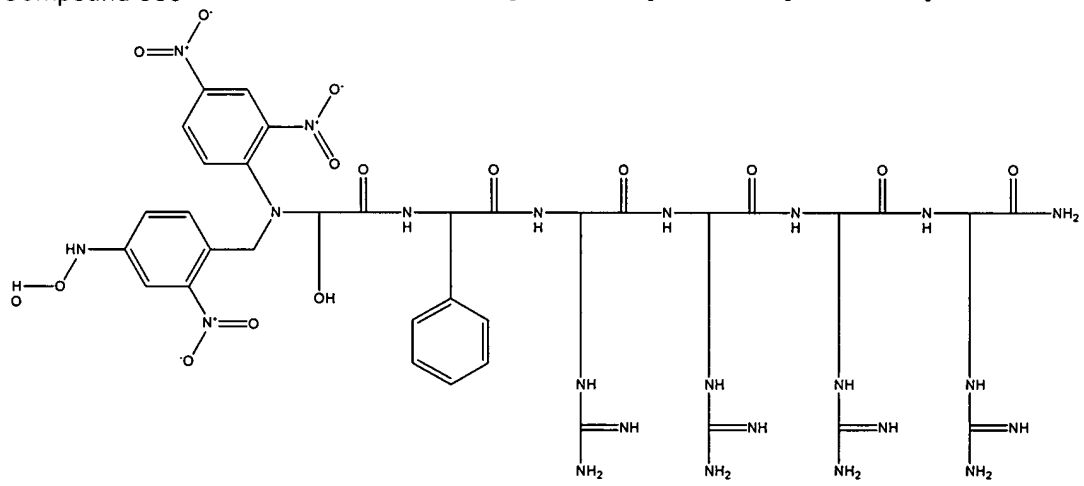
Compound 378



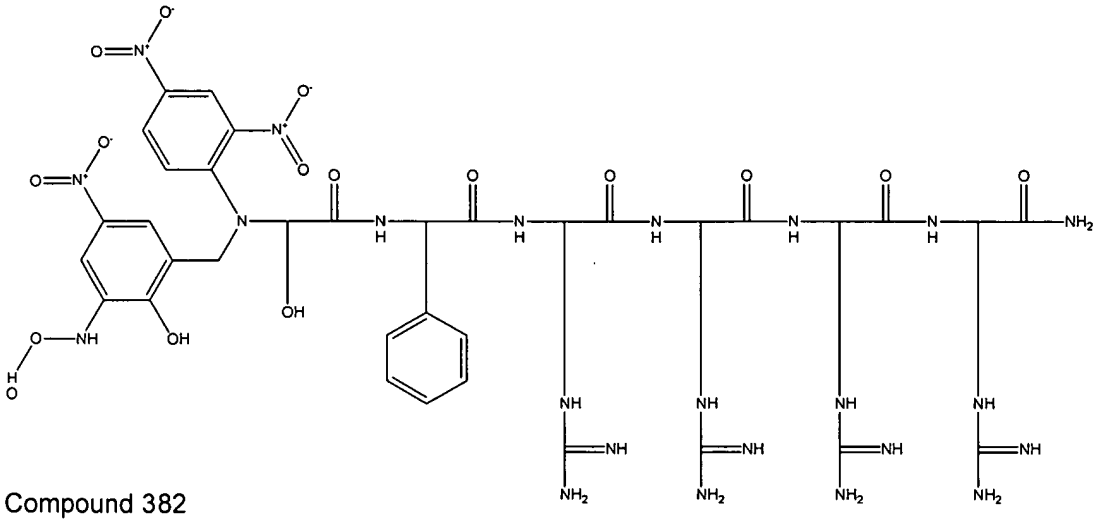
Compound 379



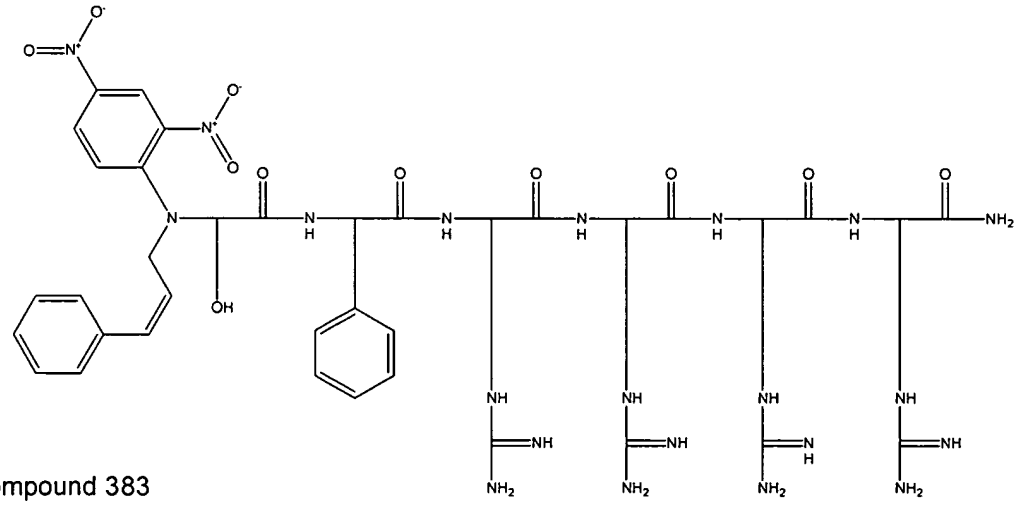
Compound 380



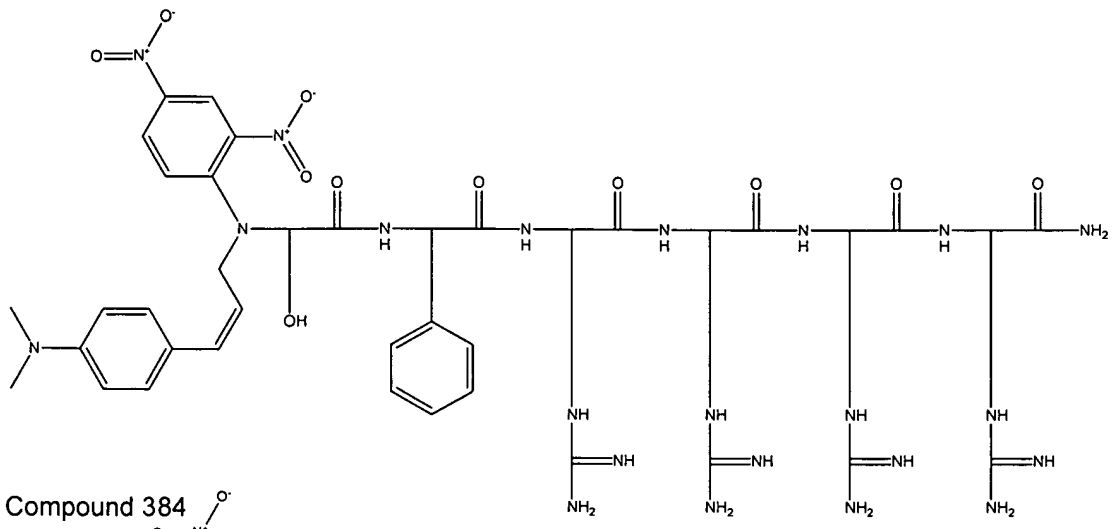
Compound 381



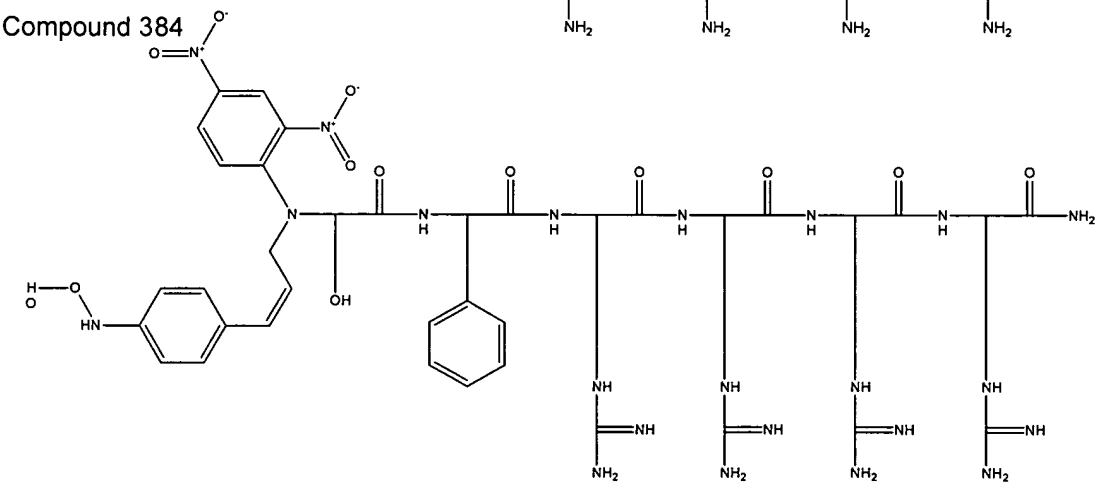
Compound 382



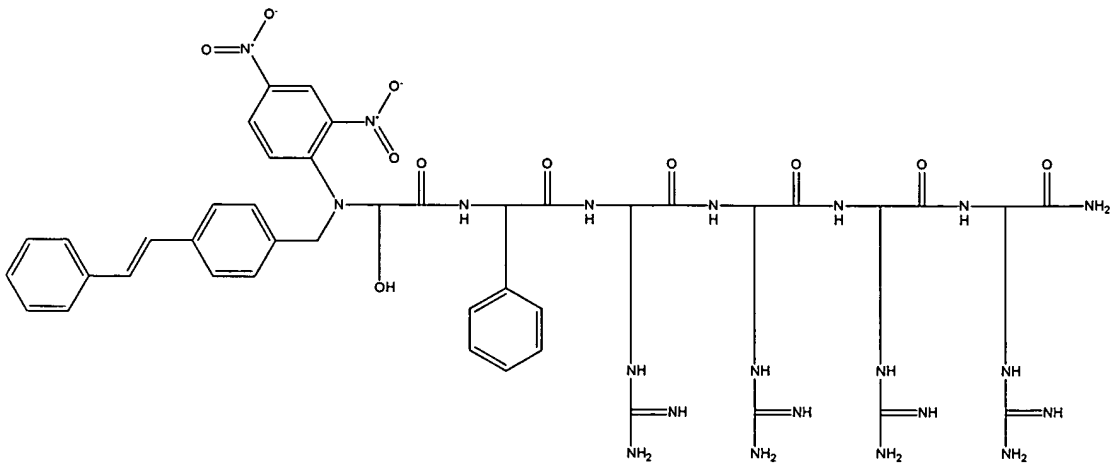
Compound 383



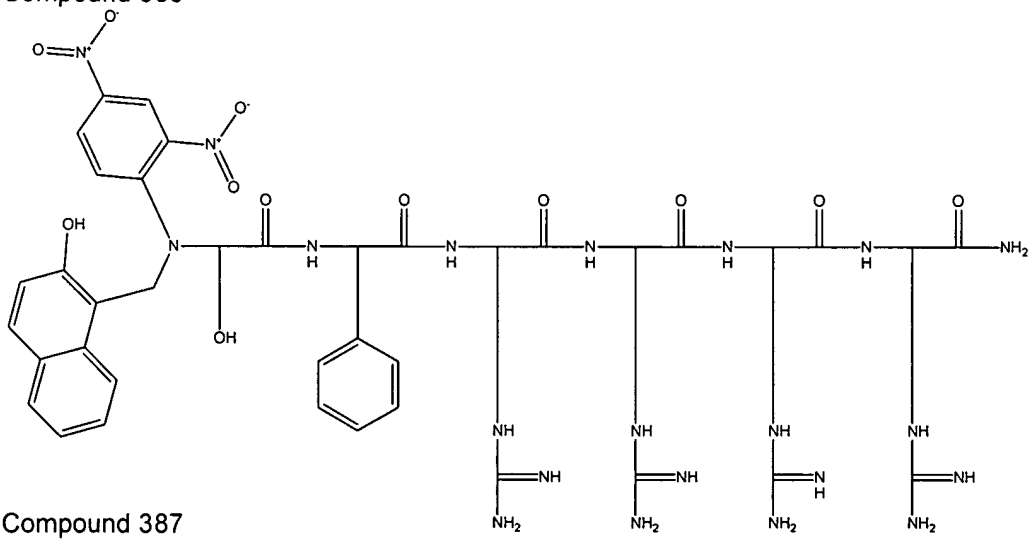
Compound 384



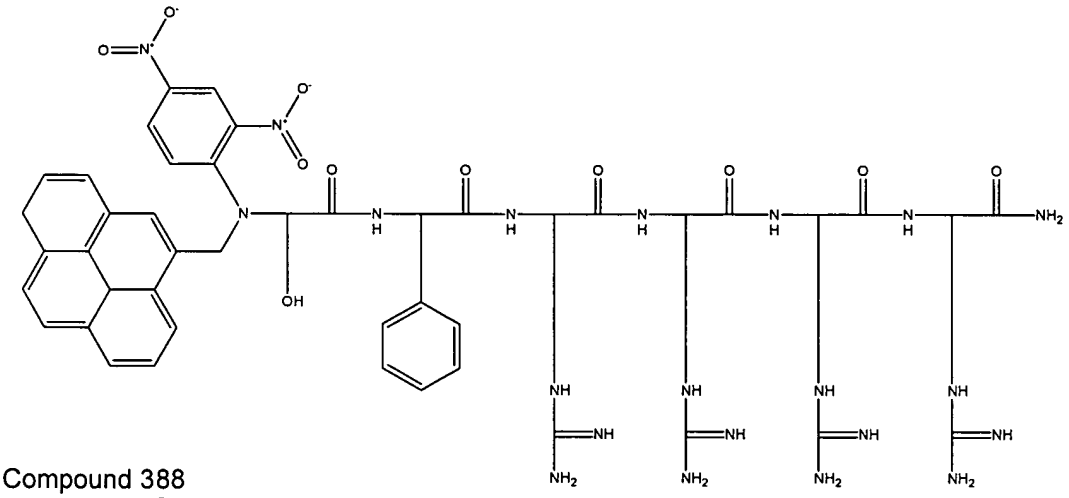
Compound 385



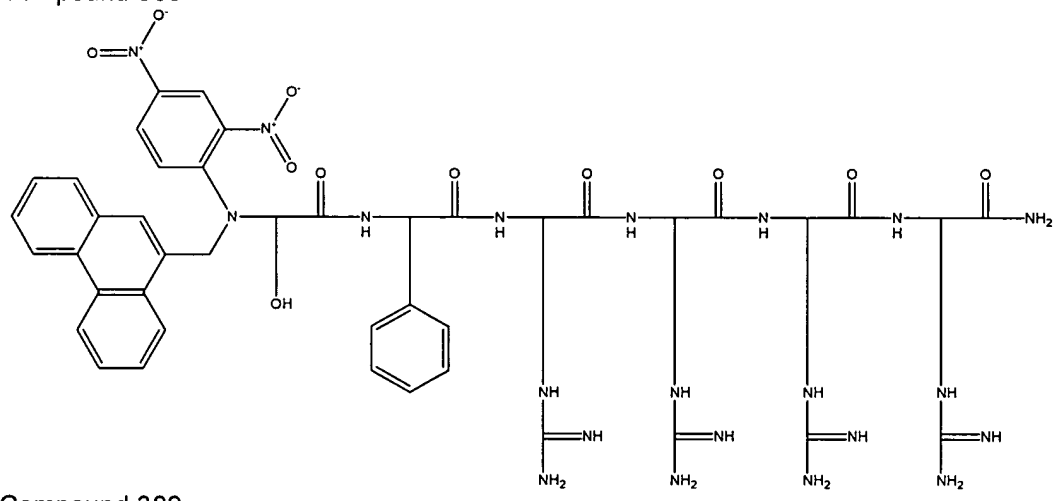
Compound 386



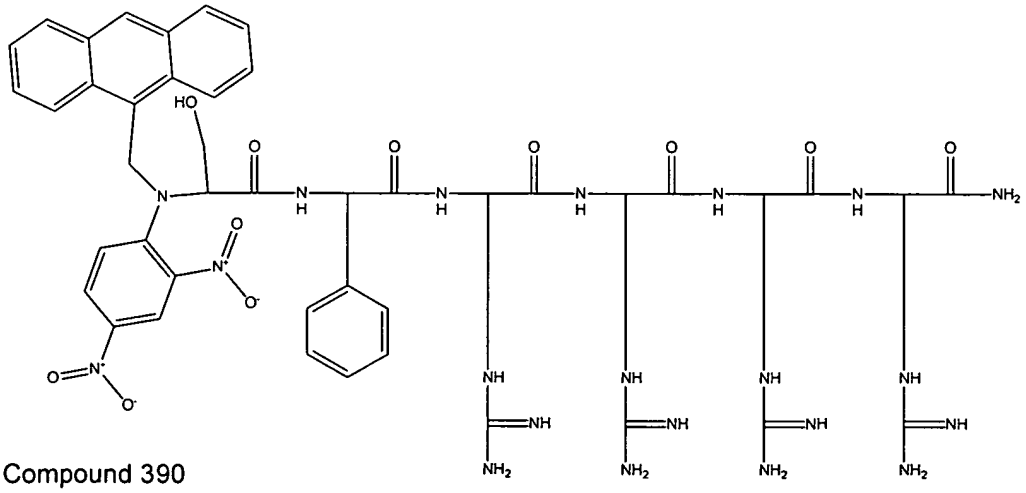
Compound 387



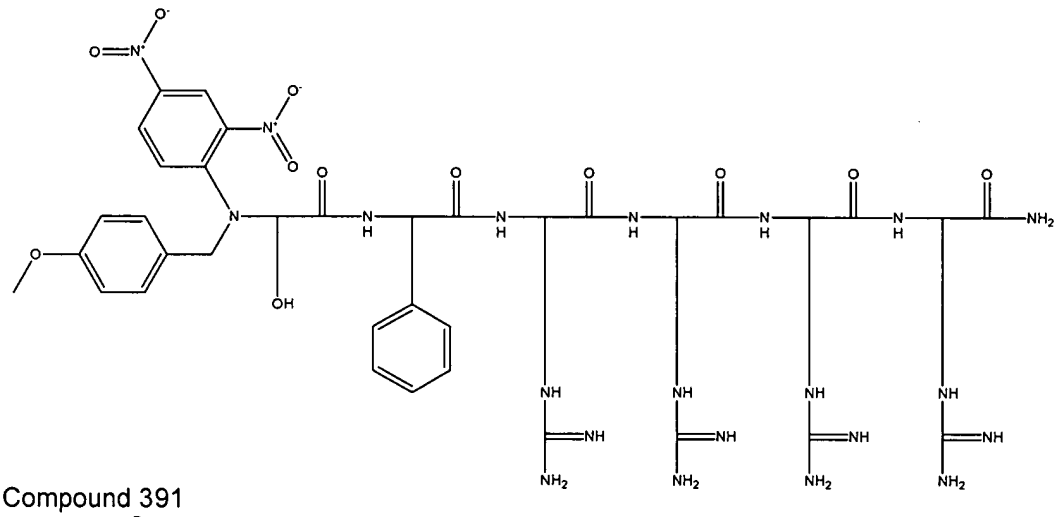
Compound 388



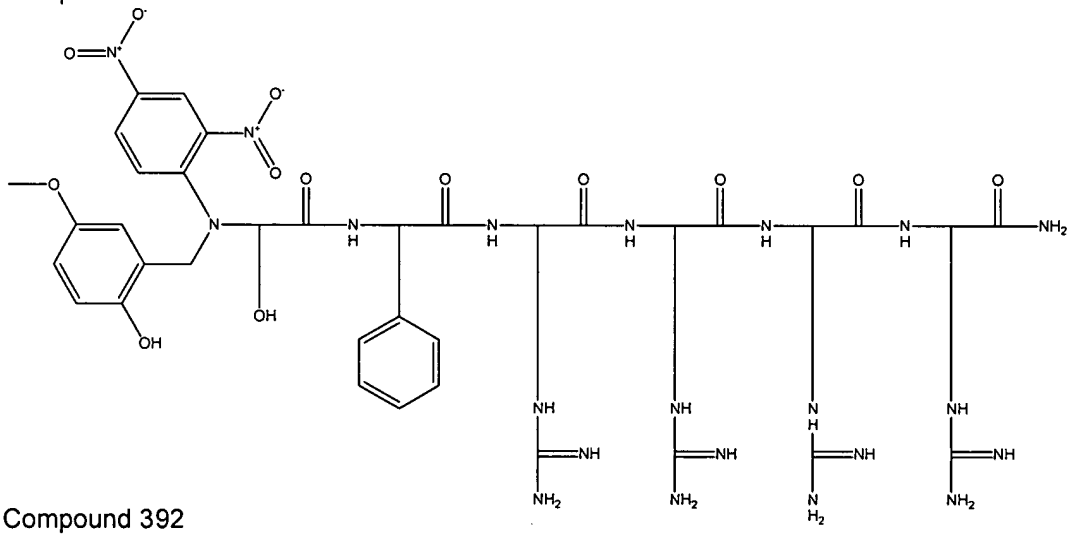
Compound 389



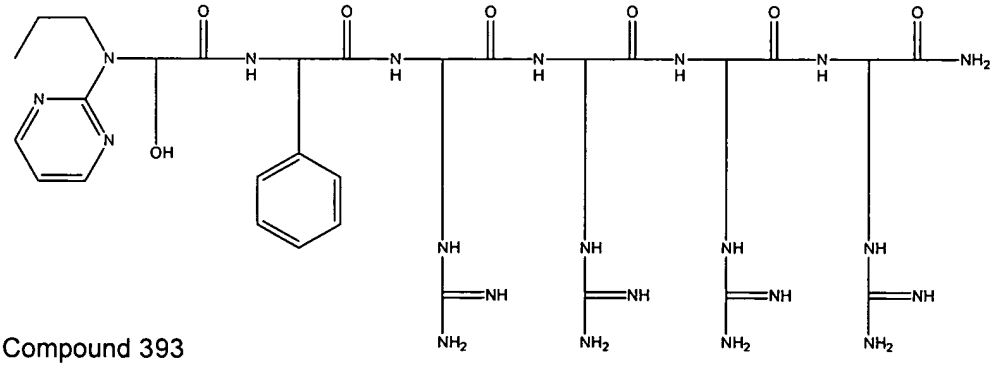
Compound 390



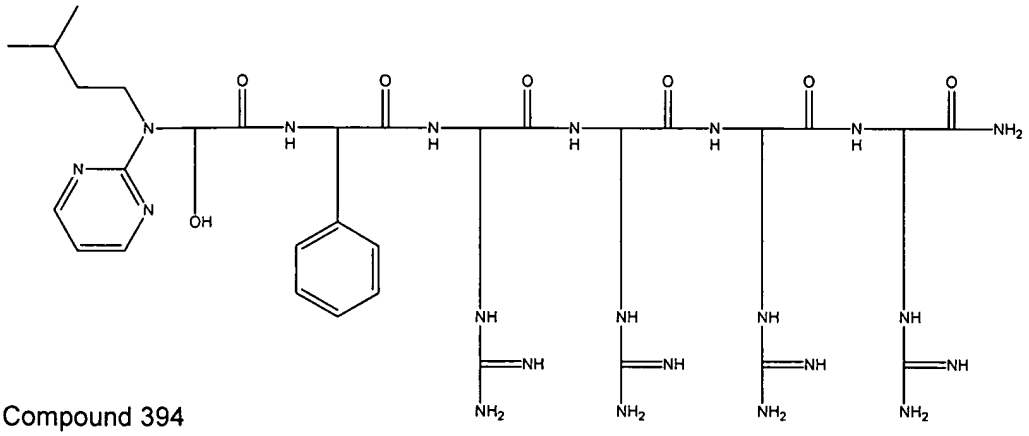
Compound 391



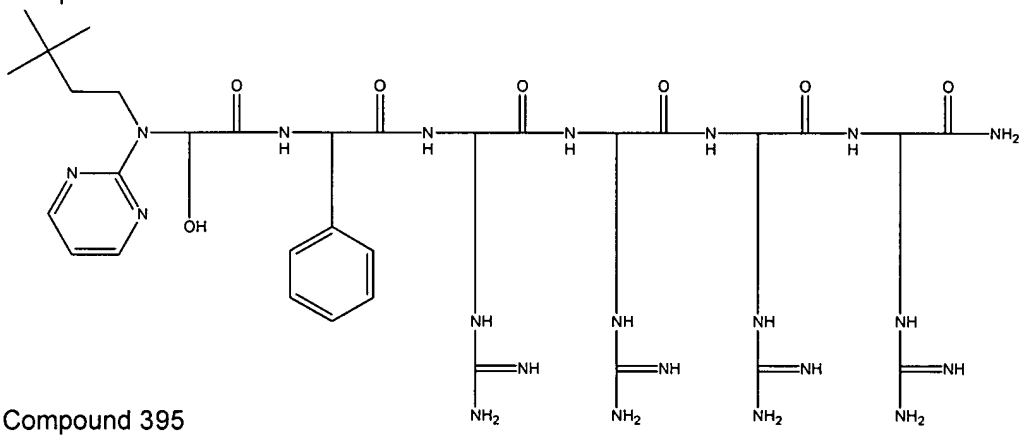
Compound 392



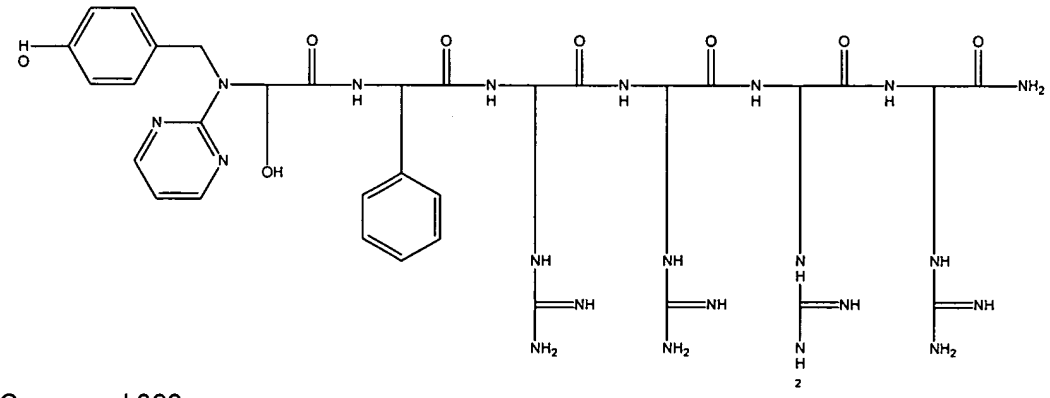
Compound 393



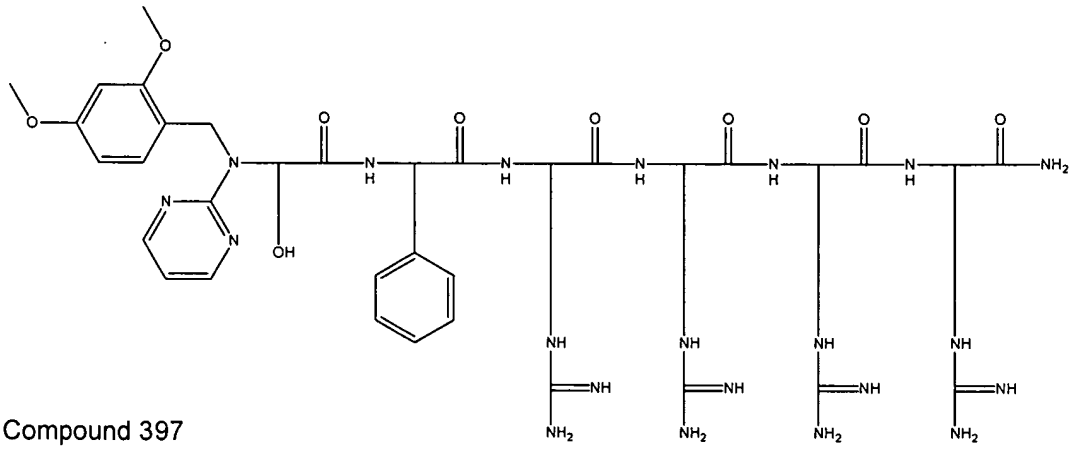
Compound 394



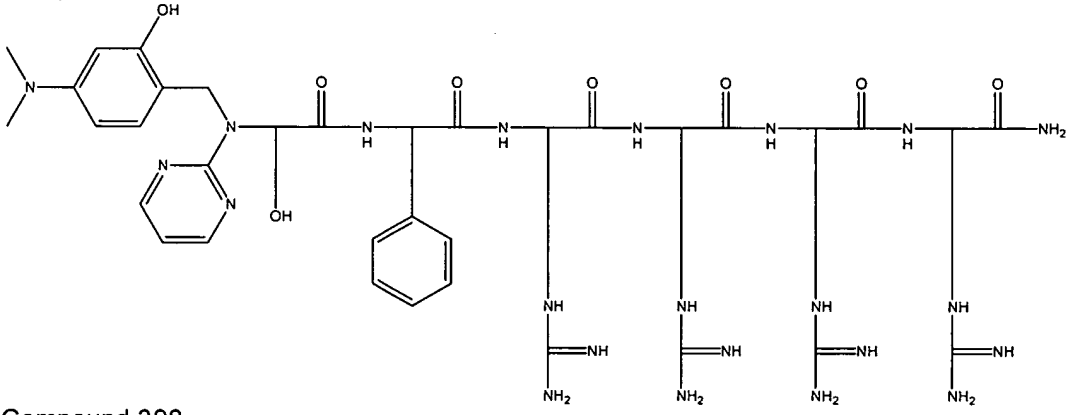
Compound 395



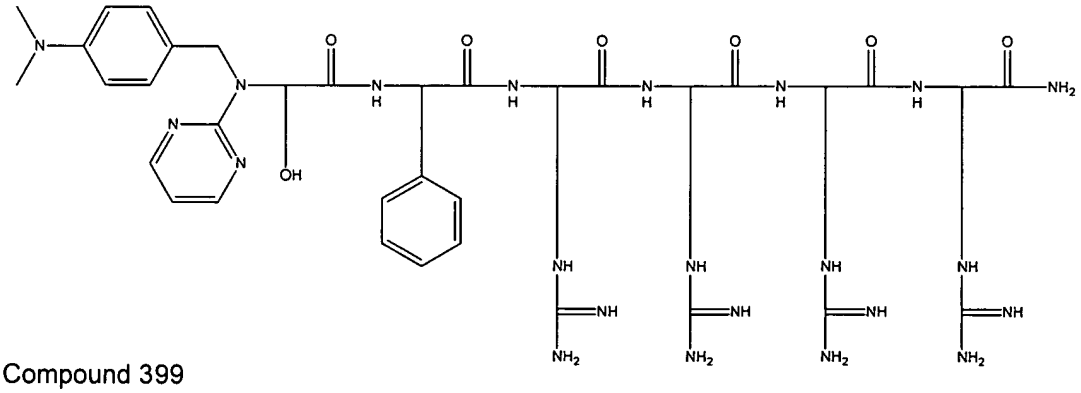
Compound 396



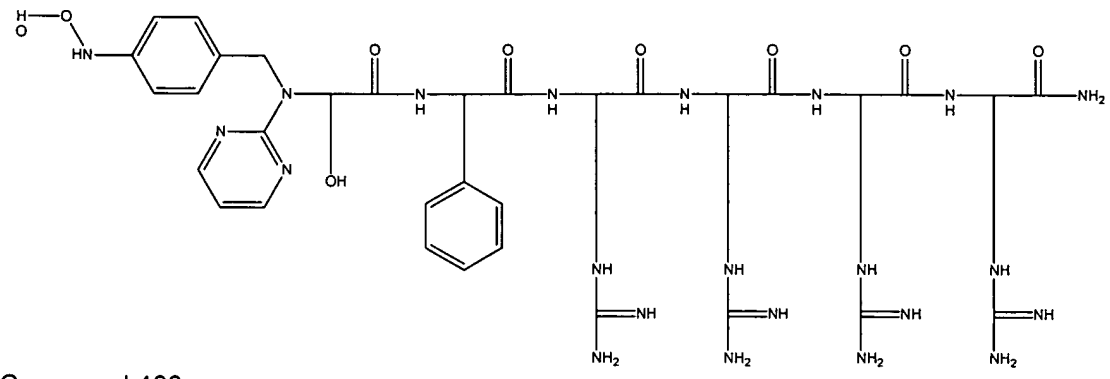
Compound 397



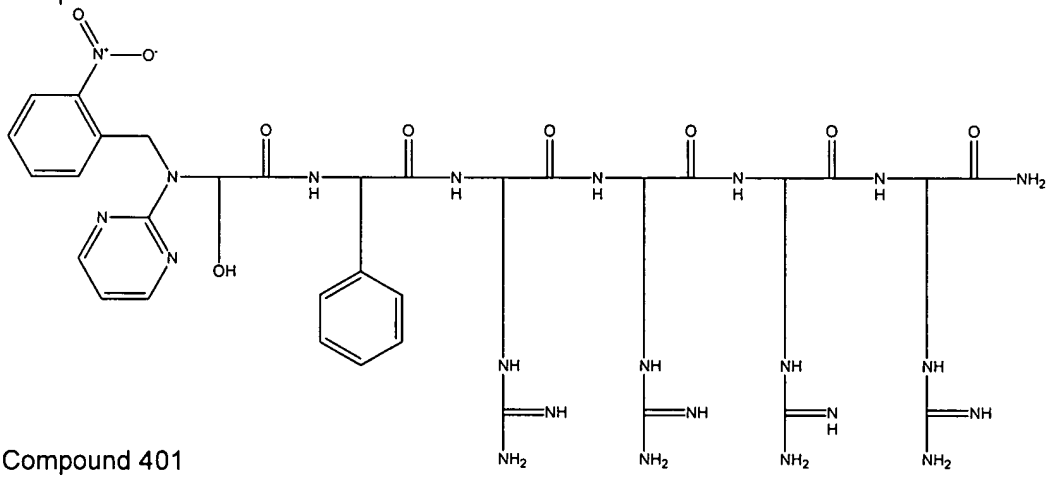
Compound 398



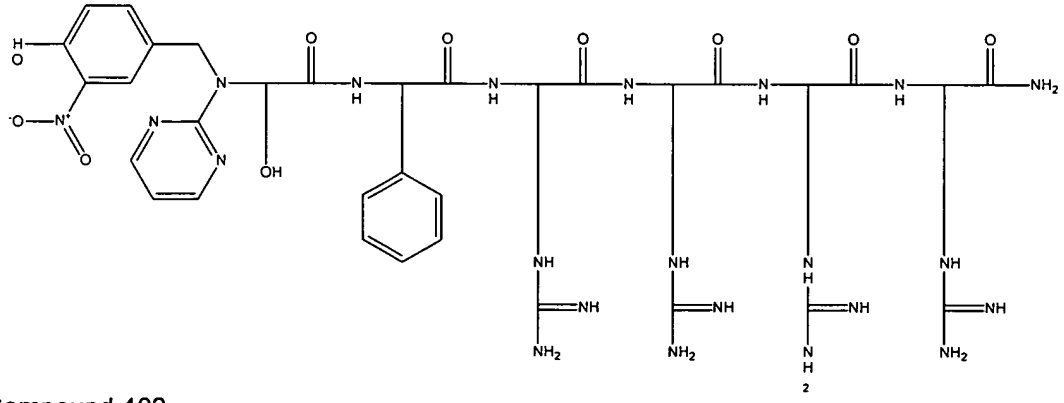
Compound 399



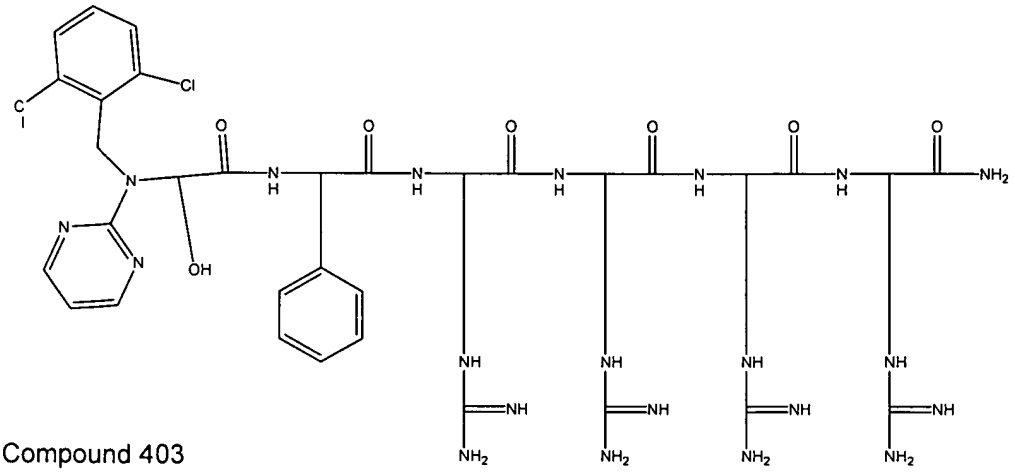
Compound 400



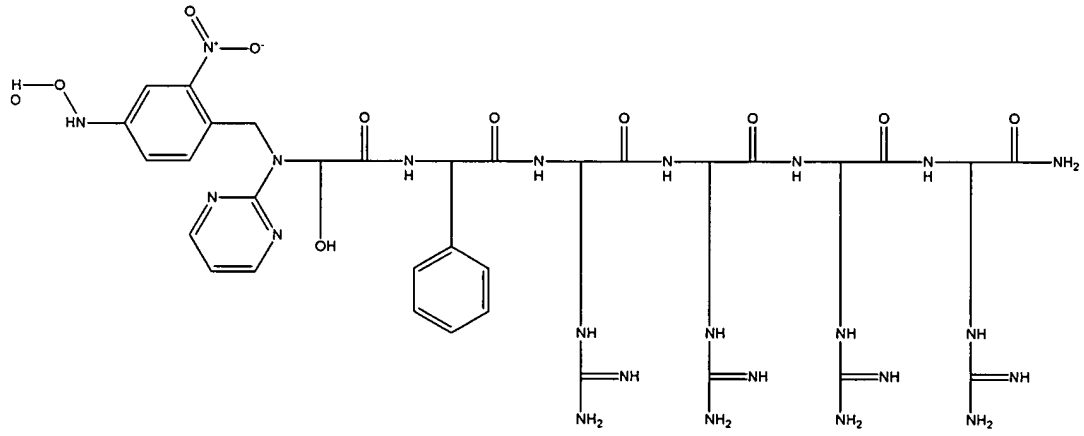
Compound 401



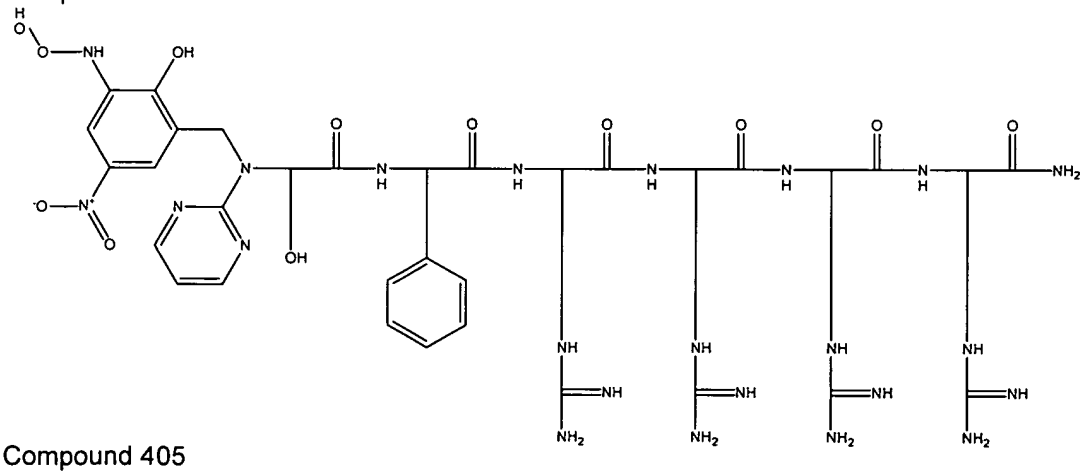
Compound 402



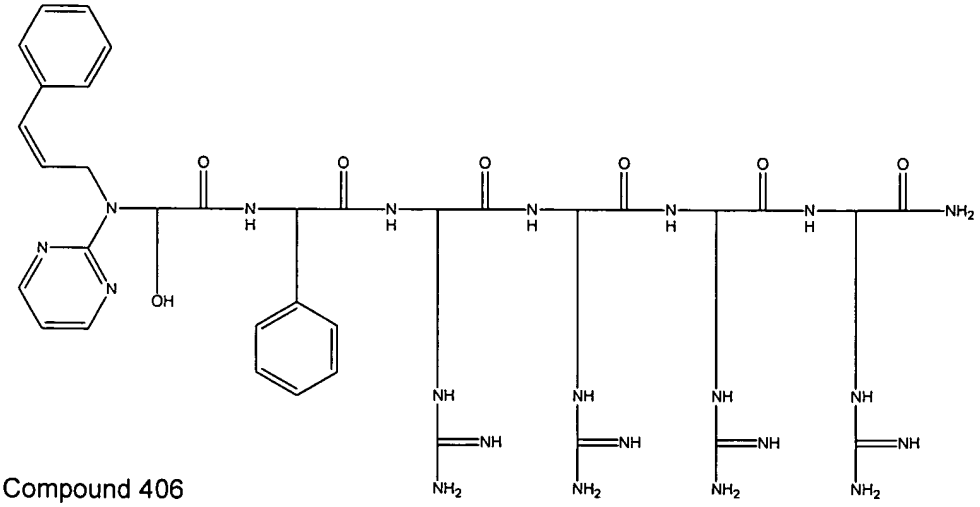
Compound 403



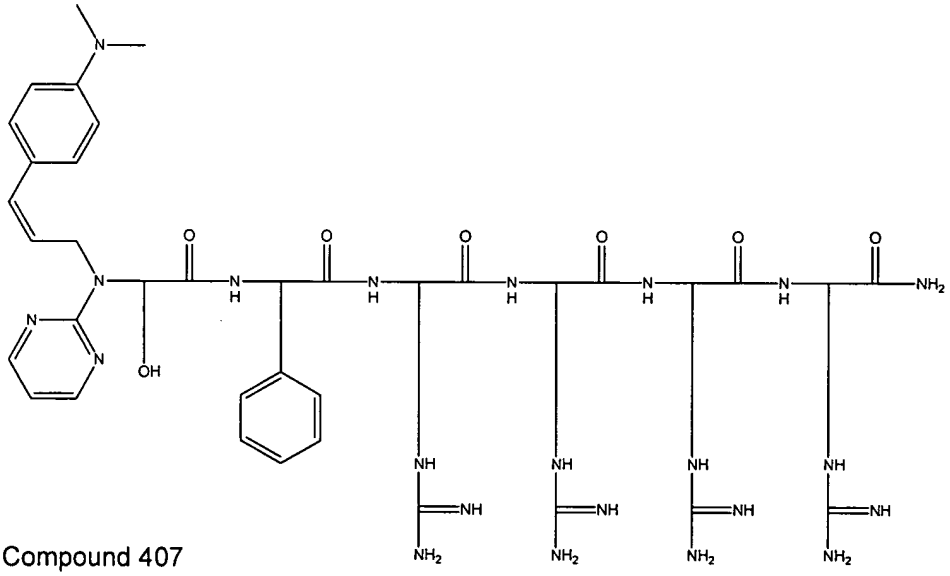
Compound 404



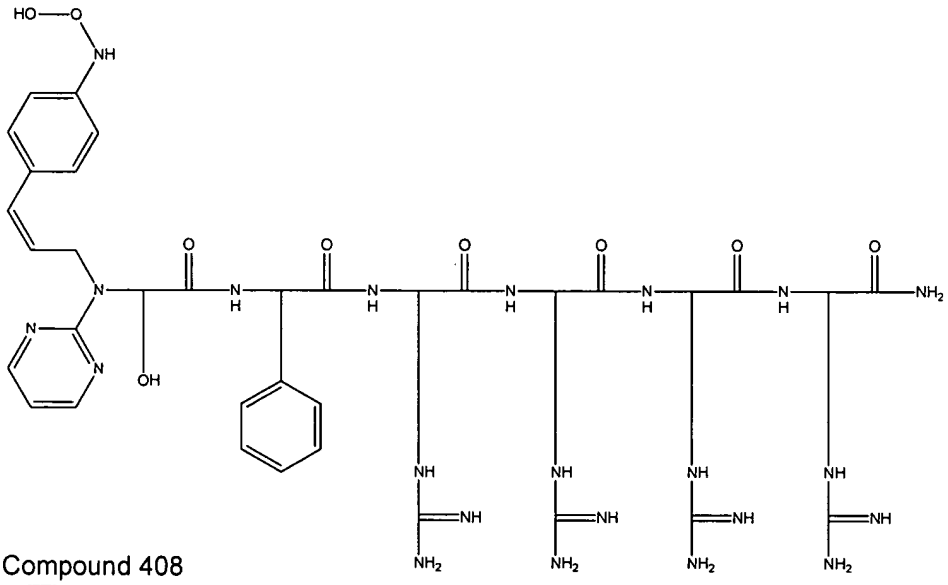
Compound 405



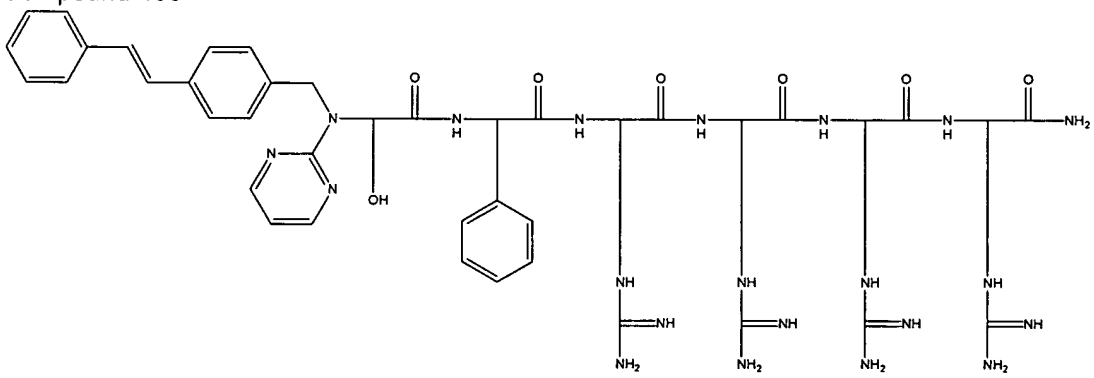
Compound 406



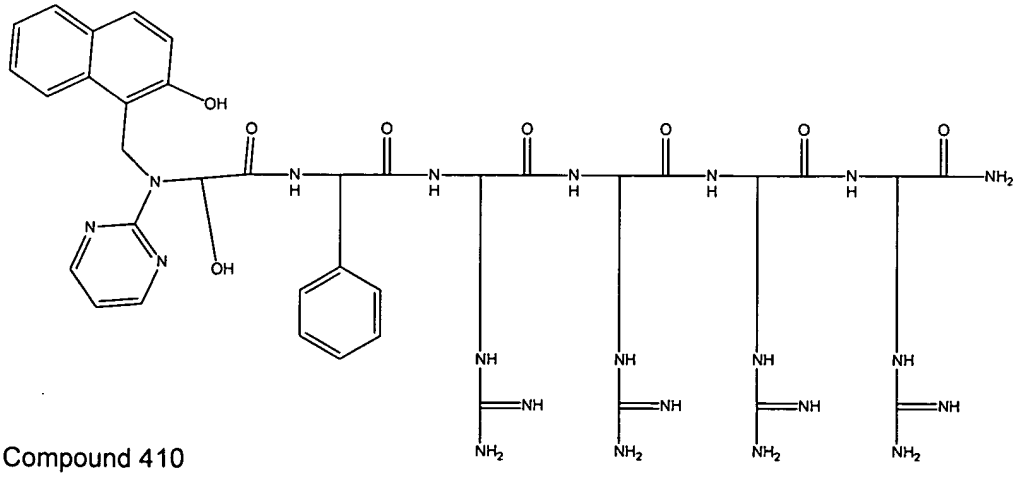
Compound 407



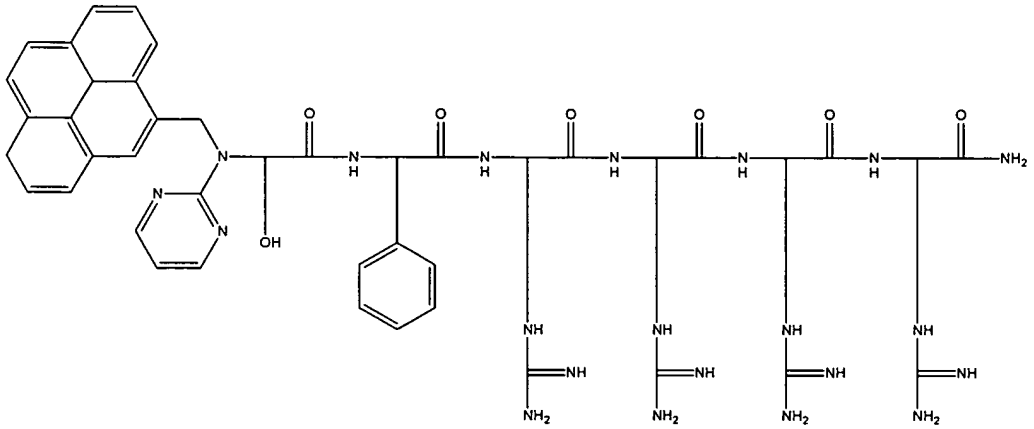
Compound 408



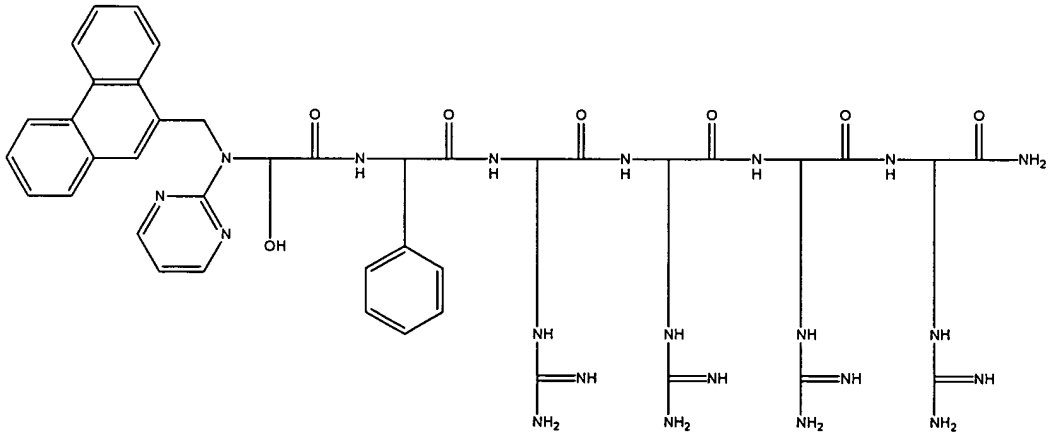
Compound 409



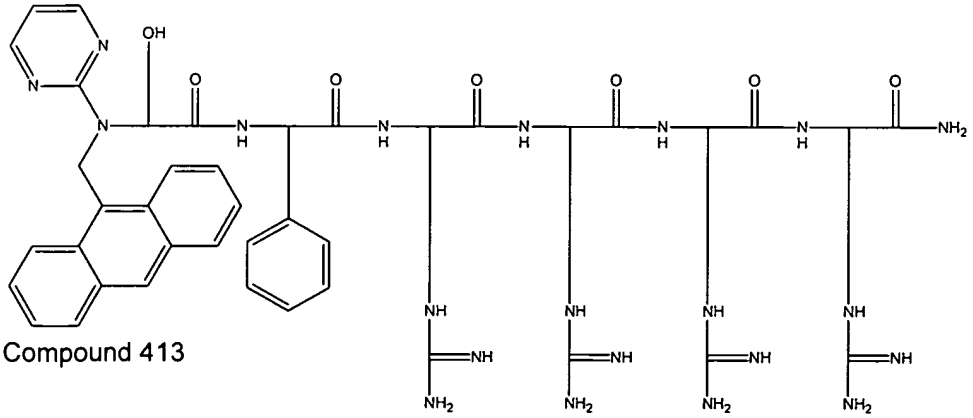
Compound 410



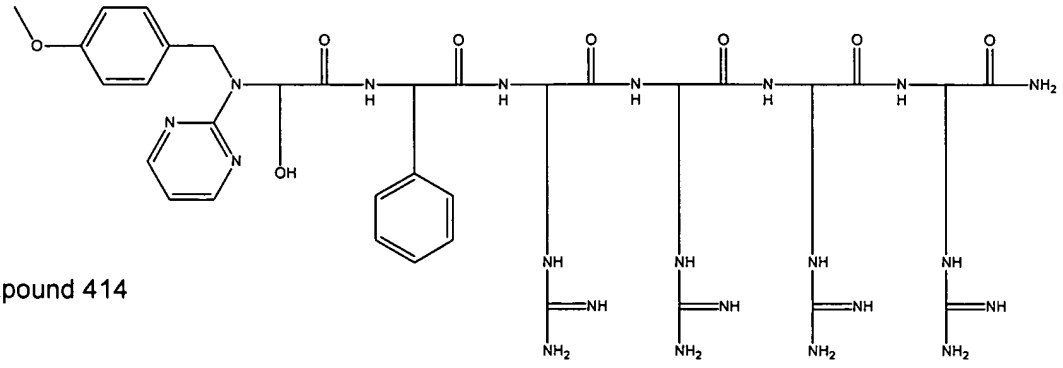
Compound 411



Compound 412

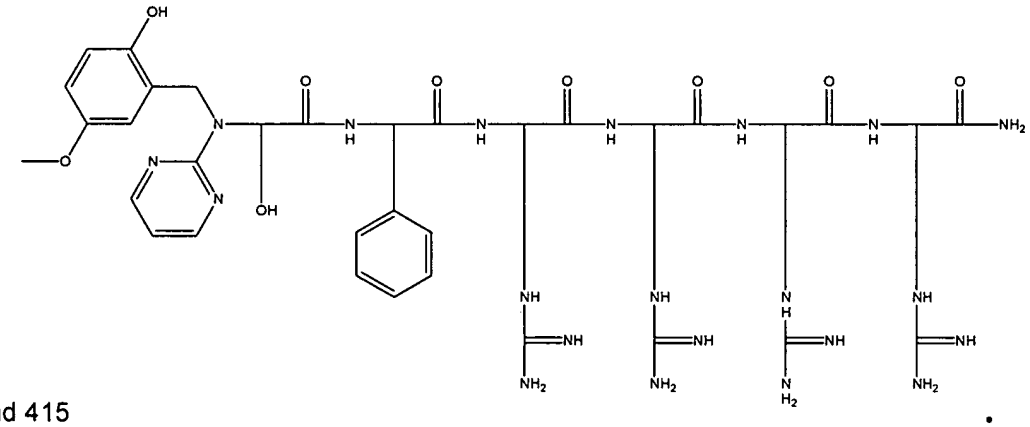


Compound 413



Compound 414

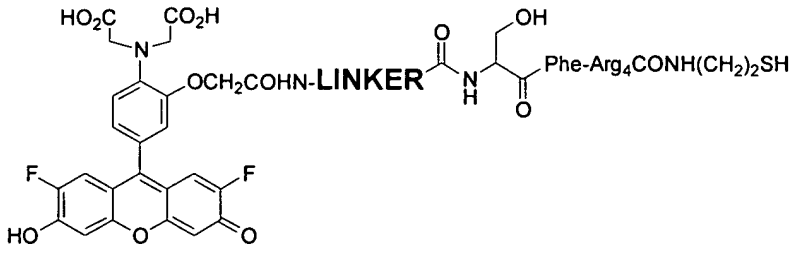
and



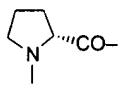
Compound 415

---

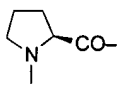
89. (Original) A chemical compound having the structure:



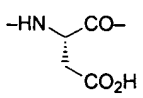
wherein the LINKER is selected from the group consisting of the following:



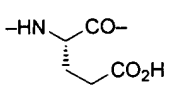
a



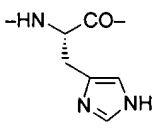
b



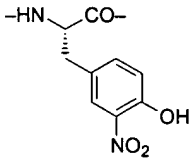
c



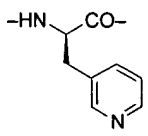
d



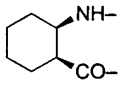
e



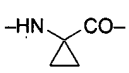
f



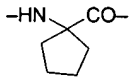
g



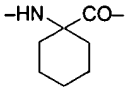
h



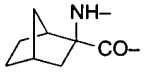
i



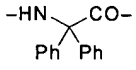
j



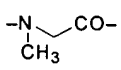
k



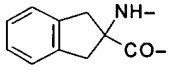
l



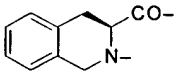
m



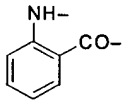
n



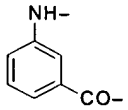
o



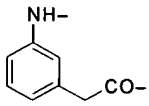
p



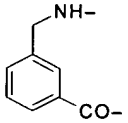
q



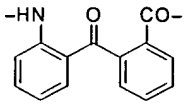
r



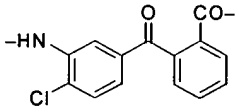
s



t



u



v

no linker

w

90. (Original) A chemical compound having the structure:

fluorophore-LINKER-X-FRRRRK-amide (SEQ ID NO:3);

wherein F is phenylalanine; K is lysine; R is arginine; and X is serine, threonine, or tyrosine.

91. (Original) The chemical compound of claim 90, wherein the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative.

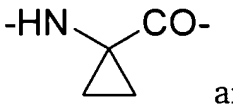
92. (Withdrawn) The chemical compound of claim 90, wherein the fluorophore is a fluorescein derivative.

93. (Withdrawn) The chemical compound of claim 90, wherein the fluorophore is selected from the group consisting of a dansyl derivative, an acridine derivative, an Alexa Fluor derivative, a BODIPY derivative, an Oregon Green derivative, a Rhodamine Green derivative, a Rhodamine Red-X derivative, a Texas Red derivative, a Cascade Blue derivative, a Cascade Yellow derivative, a Marina Blue derivative, a Pacific Blue derivative, an AMCA-X derivative, and a coumarin derivative.

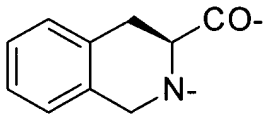
94. (Withdrawn) The chemical compound of claim 90, wherein the linker is a metal chelating linker.

95. (Original) The chemical compound of claim 90, wherein the linker is selected from the group consisting of a carboxamide linker, an aminobenzoic acid linker, a sulfonamide linker, a urea linker, a thiourea linker, an ester linker, a thioester linker, an alkylamine linker, an arylamine linker, an ether linker, and a thioether linker.

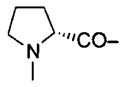
96. (Withdrawn) The chemical compound of claim 90, wherein the linker is selected from the group consisting of N-methyl glycine, L-proline, D-proline,



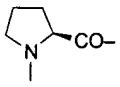
and



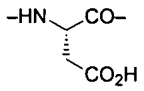
97. (Original) The chemical compound of claim 90, wherein the linker is selected from the group consisting of the following:



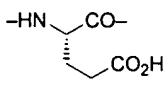
a



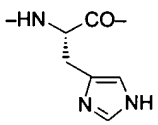
b



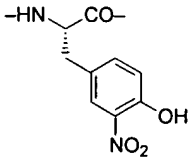
c



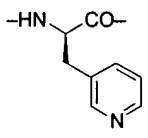
d



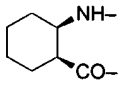
e



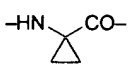
f



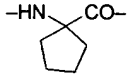
g



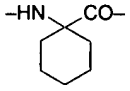
h



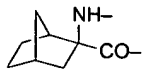
i



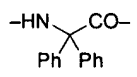
j



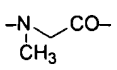
k



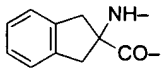
l



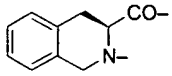
m



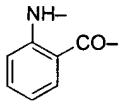
n



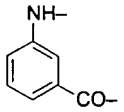
o



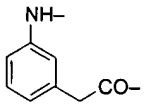
p



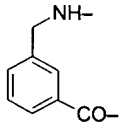
q



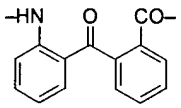
r



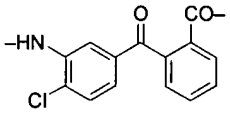
s



t



u



v

no linker

w

98. (Original) The chemical compound of claim 90, wherein the chemical compound is a substrate for a protein kinase.

99. (Original) The chemical compound of claim 98, wherein the chemical compound is specific for protein kinase C.

100. (Original) The chemical compound of claim 99, wherein the chemical compound is specific for isoforms α, β, and γ of protein kinase C.

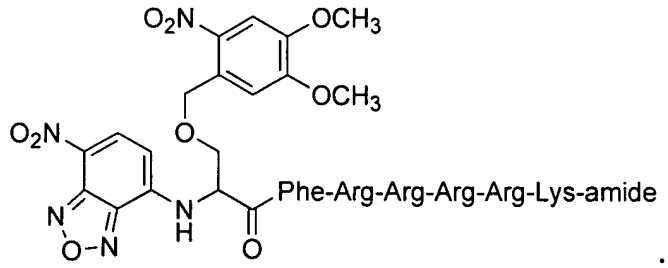
101. (Withdrawn) The chemical compound of claim 98, the chemical compound is specific for protein kinase A, protein kinase B, protein kinase D, protein kinase G, Ca^{+}/calmodulin-dependent protein kinase, mitogen-activated protein kinase, protein kinase mos, protein kinase raf, protein tyrosine kinase, tyrosine kinase abl, tyrosine kinase

src, tyrosine kinase yes, tyrosine kinase fps, tyrosine kinase met, cyclin-dependent protein kinase, or cdc2 kinase.

102. (Original) The chemical compound of claim 90, wherein the chemical compound further comprises a carbohydrate, a lipid or a nucleic acid.

103-121. (Canceled)

122. (Original) A chemical compound having the structure



123. (Previously presented) A composition comprising a chemical compound of claim 89, and a carrier.

124-126. (Canceled)

127. (Previously presented) The substrate of claim 60, wherein the substrate comprises a metal ion chelator.

128. (Original) The substrate of claim 127, wherein the metal ion is a magnesium ion or a calcium ion.

129. (Currently amended) The chemical compound of claim 90, ~~94,~~ wherein a metal ion chelator induces a change in fluorescence intensity.

130. (Original) The chemical compound of claim 129, wherein the metal ion is a magnesium ion or a calcium ion.

131. (Original) The chemical compound of claim 129, wherein the change in fluorescence intensity is at least a 20% change in fluorescence intensity.

132. (Canceled)

133. (Currently amended) The chemical compound of claim 90, ~~substrate of claim 81,~~ wherein the linker comprises a turn to position the fluorophore in a location closer to the ~~terminal~~ serine, the ~~terminal~~ threonine or the ~~terminal~~ tyrosine than the location the fluorophore would occupy in the absence of a turn in the linker.

134. (Previously presented) The chemical compound of claim 89, wherein the linker comprises a turn to position the fluorophore in a location closer to the terminal serine, the terminal threonine or the terminal tyrosine than the location the fluorophore would occupy in the absence of a turn in the linker.

135-136. (Canceled)

137. (Previously presented) The composition of claim 123, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically

acceptable carrier.

138. (Previously presented) A composition comprising the substrate of claim 49, and a carrier.

139. (Previously presented) The composition of claim 138, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

140. (Previously presented) A composition comprising the compound of claim 88, and a carrier.

141. (Previously presented) The composition of claim 140, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

142. (Previously presented) A composition comprising the compound of claim 90, and a carrier.

143. (Previously presented) The composition of claim 142, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

144-145. (Canceled)

146. (Previously presented) A composition comprising the compound of claim

122, and a carrier.

147. (Previously presented) The composition of claim 146, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.